GAS

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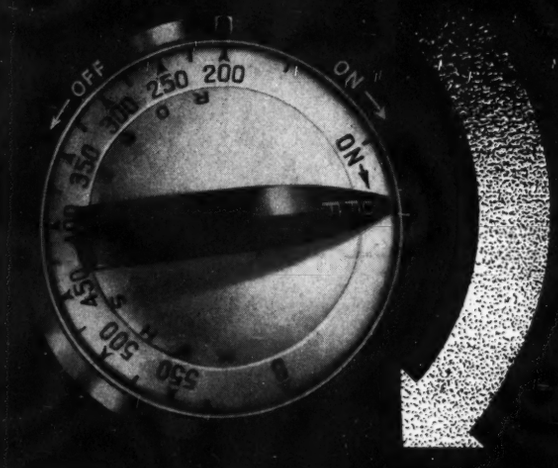

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GAS

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Seventeenth Year of Publication

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GUEST Editorial

COOPERATION
Today's Basic Need

By WATSON E. DERWENT

President, Association of Gas Appliance and Equipment Manufacturers

IT IS but natural to assume that our real object as manufacturers is to cooperatively further the interests of the gas industry and the manufacture of gas appliances and equipment. Along with this objective of gas industry and manufacture is a definite responsibility to the public, whose good-will we must have to survive, as well as our constant and increasing obligation to contribute in every possible way to the continued economic soundness of our country if we as a country are to successfully accomplish the stupendous job of national defense which we are now facing. I am sure we are agreed that appliance manufacturing and selling, in cooperation with the distribution of gas, has much to do with this continued national economic stability.

During these times of constant change and uncertainty, there are naturally many problems which we as manufacturers must meet. For instance, the necessity for planning operations even a short time ahead due to the increased pace in the majority of today's markets. It would seem that these very problems should make it essential that we work in harness together in an effort to make the business highways smooth, for any job to be well done must be tackled with an honest attempt at cooperation. If we approach our problems in that spirit, the matter of coordinating the functions of the utilities and the manufacturers would then be largely one of building for specific plans of cooperation.

The research and development programs of the individual manufacturers' plants have through the years shown a constant effort for a higher standard of quality which has perfected equipment that has no peer in competitive fuel. Even in this very technical phase of the business the cooperative spirit maintains and contributes to the program in an important way.

The introduction of the CP gas range is an excellent case in point. One of the important reasons why the CP gas range is universally accepted today as an infallible consumer buying guide is by virtue of the fact that it was the consumer herself who had an active part in determining what 22 minimum specifications should be incorporated in this quality product.

There have been few times in the world's history when cooperation and unity in business, social and national life were more vitally important. The manufacturers of gas appliances and equipment, as well as the gas industry, have apparently long recognized this, with very gratifying and encouraging results.

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Photos by Robert Yarnall Richie

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THERMALLY *Thinking*

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RESIDENTS of the proud and lovely city of Los Angeles are notoriously inclined to be preoccupied with the state of their health in this life and the probable destination of their souls in the life to follow. And while there is said to exist in this inland Jewel of the Pacific more separate religions than in any other city, regardless of size, in the world, and even though each sect and belief hands to all of its followers practically a free pass to Paradise in the Life to Come, one and all cling with a desperate embrace to existence in this sinful world. They take no chances on a premature discovery that the delights of Heaven are at best only a poor substitute for those of Southern California.

Only against this background can we view with sympathy and understanding the current advertising campaign of "Your City-Owned Bureau of Power and Light, City of Los Angeles" to point out the superior advantages of electric water heating over that using any other kind of fuel. Gas men may not be acutely aware of the fact, but an electric water heater is "Safe enough to be installed anywhere." There are "No flames to leap out, no burner to light, no pilot to go out." Whether or not there is ever any short-circuiting is not stated, whether it is easier to light a pilot light once, than it is to replace an electrical heating element and burned out fuses at periodic intervals is not discussed, due no doubt to space limitations imposed by the rigid operating economy that is so characteristic of all City-Owned Bureaus of Power and Light.

There are "No fumes to creep out . . . no feeling of insecurity." It might truthfully be added that in addition to no fumes, there is also no hot water to creep out after the evening dishes have been done until the low B.t.u. input has laborously built up the storage to temperature. Aside from the possibility of the house burning down in the dead of night due to an overload on electrical wiring not designed to handle a carefree, safe, modern, dependable, clean, silent and reliable electric heater there is no feeling of physical insecurity. The feeling of social insecurity that comes of receiving high electric bills is of course a secondary consideration. And the fact that a benighted burgher, moving from the area of Municipal Munificence to a territory where the power rate had to pay its own way, would have to set aside a small endowment to operate his fumeless flameless flueless acquisition is rightfully ignored. For, after all, who ever heard of anyone moving away from Los Angeles.

Citizens of lesser concentrations of culture and climate rightfully envy Los Angelenos. Aimie Semple McPherson has saved their souls, and now their city-owned Bureau of Power and Light will save their skins.

The Security of Tomorrow

SERIOUS problems confront gas utility executives who are faced with requests, that may shortly become demands, for the extension of gas service to areas and to new communities that are being developed in our current preparation for war program. In many instances factory expansion and new construction are being financed under the government's plan of advancing the money and allowing it to be amortized out of orders over a five year period. The question arises whether or not utilities that extend gas mains to serve such plants and communities will be allowed to set a rate structure that will provide for a similar amortization, or at least some safeguard against future unused capacity in the event that the new facilities cannot be operated at a load factor sufficient to pay for the investment.

We believe that the quickening trend today is for government to exercise an ever increasing directional authority over all industry. And we believe that those industries which show the greatest willingness not only to cooperate, but to accede to every reasonable demand of defense preparation will be those that will feel with less severity the weight of the dictatorial hand that hangs over them.

It may be argued that to do so will violate the canons of sound finance. The answer to that is that the canons of sound finance are already disappearing in the insatiable maw of war economy, and a nation that was once asked to shudder at the spectacle of a national debt of $40,000,000,000 now listens with equanimity to the assertion that this country can carry a debt of $90,000,000,000.

During a period of war economy every nation learns that whatever is *physically* possible, from the standpoint of real wealth, man power and technical ingenuity must be *financially* possible. The fall of France and the desperate plight of the British Empire today are laid by many students of finance to the tardiness with which those two countries faced this fact. Yet it is a truth that should be self-evident; for on it depends national survival, and if national survival is sacrificed, of what use is any system of finance.

No man can forecast the future as to precise events. Only the philosophy that may shape the things to come is discernible in the present heroic confusion. It is a philosophy of a more equitable distribution of the world's goods, of a conception of consumption rather than production as the guiding impulse behind national economics. No war lord, from Hitler to Churchill, has dared offer a promise of less to those who are asked to sacrifice their fortunes and if need be their lives, to the consummation of their country's ideals.

Such a concept, we believe, will not die when the last shot is fired, for the last shot will not be fired until the last step of which civilization is now capable has been taken along the road to not only political democracy but economic democracy as well.

Then, if wanted goods and services are available, and if a nation of farms and factories and utilities stand ready and able to deliver those services, the canons of once-sound finance will not stand in their way. And those who man the farms, direct and operate the factories, and who plan and deliver utility services will find in their material equipment a greater security than can be measured by any stock market quotation. In our opinions such security in possession as can be counted security today, lies in ownership of real wealth, of land and properties that can produce the goods and services that no people can do without. To the extent that new construction to serve defense plant expansion adds to the sum total of this security, any utility that extends itself to the utmost is not only contributing to the maximum national defense effort; it is safeguarding its present and its future position in the evolving pattern that has come to be known as the American Way of Life.

Combustion Experiments

With Liquefied Petroleum Gases

By FRANK KNOY

Gas Department, City of Long Beach, California

WITH its butane-air gas plant going into service this winter, (*GAS*, February, 1941, pp. 21-27) the City of Long Beach Gas Department was naturally interested in the various problems that might arise in connection with the use of butane-air as a supplement or a substitute for natural gas.

If such a gas is to be fed into a network at one point only, it is likely that some consumers near this point will get it in greater proportion than will those on remote parts of the system. Some consumers near the mixing plant may get pure substitute gas at one time, pure natural gas at another, and various mixtures of the two at others. Hence, the mixture must have combustion traits as nearly identical with natural gas as possible. Stated another way, it must burn perfectly in domestic appliances previously adjusted for the normal natural gas supply.

Though we hope to obtain a substitute that will burn as well as natural gas in the average appliance, it is not our plan to supply straight butane-air to any group of consumers. We expect any mixture going out to be at least 30% natural gas.

To familiarize ourselves with the problems involved, and to go as far as possible toward their solution in advance, we decided to set up a laboratory-scale mixing plant. Here, by actual tests with regular appliances, it was hoped we could learn the traits of various mixtures by studying their performance under controlled conditions.

Since, at some time during the life of the plant, it might be desirable or necessary to use propane or a mixture of propane and butane, we wished to get combustion data on propane-air mixtures at the same time.

Purpose of Experiments: The objective of these experiments was to determine to our own satisfaction the answers to the following questions:

a. Is it possible to take whatever liquefied petroleum gas that may be available and, by mixing air with it, produce a gas that is a satisfactory substitute for our regular natural gas supply?

b. When a substitute mixture is obtained, what is the effect on the combustion in appliances of mixing it with various proportions of natural gas?

c. What effect does the substitute mixture have upon the hourly B.t.u. rate of ordinary domestic appliances?

d. What effect would the use of such a substitute gas have upon consumer's average gas bill?

e. What effect will the heavier mixture have upon pressure in the distribution network?

Summary of Results and Conclusions:

a. It is definitely possible and practicable to take either butane or propane or a mixture of the two and, by mixing it with air, obtain a satisfactory substitute for natural gas.

b. Once a satisfactory substitute gas is produced, it may be mixed in any proportion with natural gas without having the least effect on the quality of combustion in domestic appliances.

c. The hourly B.t.u. rate of domestic appliances will be substantially the same as on natural gas, and in no case will it drop more than about 5%—a change so small that it is negligible in practice.

d. The use of a high B.t.u. substitute gas will result in a reduction in the consumer's gas bill. The gas bill will vary in inverse ratio with the heat value of the gas supplied. The higher the heat value, the lower the gas bill.

e. Pressure gradients on the network will remain unchanged for a constant B.t.u. load on the system, whether natural gas or the substitute is being used.

The Test Set-Up: The diagram, Fig. 1, shows the essentials of the test set-up. Provision was made to meter air, natural gas, propane gas, and butane gas into the test header at a steady pressure of 7 in. of water. The pressure was maintained steady by adjusting the vent valve each time a change was made in input to or output from the header. This obviated the necessity of pressure corrections on meter readings. Since the supply piping and meters were exposed to the same room temperature and small volumes were used, no temperature corrections were thought necessary.

With this arrangement we could adjust all appliances to a sharp, clean fire on the regular natural gas supply, then vary the mixture until we obtained a similar fire with butane-air or propane-air. The composition, heat value, and gravity of this satisfactory mixture could then be determined by checking readings on the calorimeter, gravitometer, and the meters on the individual gas supply lines. Having found a satisfactory mixture, we could then feed in various proportions of natural gas with it and thus simulate actual conditions that might arise in practice. An analysis of the behavior of various mixtures is given on the following pages.

FRANK KNOY

IN THIS ARTICLE Mr. Knoy has developed a useful and practical relationship between gravity and heating value of butane-propane-air mixtures, as utilized satisfactorily in gas appliances adjusted for natural gas, which relationship greatly simplifies control of a standby plant. Knowing the range of heating values and corresponding gravities that will produce satisfactory combustion, it is a simple matter to regulate the plant output, regardless of composition changes in the butane-propane supply, by means of the indication of a recording calorimeter and gravitometer operating on the gas-air mixture leaving the plant.

Mr. Knoy received a B. S. degree in mathematics and chemistry at Texas Christian University. For several years he was connected with a large public utility company as plant efficiency engineer. During the period 1928-1932 he was a frequent contributor of engineering articles to trade journals.

For the past five years Mr. Knoy has been with the Long Beach Municipal Gas Department as combustion engineer, handling industrial sales and service.—Editor.

The appliances used (See Fig. 2) included:

1 Used range.
1 Used radiant heater.
2 Old style water heater burners.
2 Modern floor furnace burners.
1 Electrolux refrigerator.

While this list does not include all kinds and types of appliances, we thought it sufficiently representative to fulfill the purpose of our test.

We might add here that none of the test appliances gave the slightest trouble on any mixture that checked satisfactory according to the curve, Fig. 3; though some were sensitive to lean mixtures and others to rich mixtures.

Correlation of Instruments: Each of the various gases, and the air used, was measured with a new No. 1 Sprague meter carefully checked for accurate registration. Gravity determinations were made by a Ranarex Gravitometer, and checked against meter readings and an occasional Edwards Balance test. Heat values were determined by a Junkers Calorimeter and checked against metered volumes and gravity figures, (Fig. 4). Table No. 1 shows that a very satisfactory correlation was obtained between the various instruments.

This correlation was relied upon for the remainder of the test, and served a very useful purpose. For example, in making dozens of mixtures in one day, time did not permit stop-watch reading on each meter and a calorimeter test every time. If necessary, we could take the gravitometer readings only, and from this calculate the volumetric percentages and the heat value of simple butane-air or propane-air mixtures. If more than two constituents were in the mixture, we could rely on gravitometer and meter readings together.

The Substitute Mixture: As shown by numerous tests we made, see Table No. 2, it is a simple matter to get a mixture of either butane-air or propane-air that will burn well in appliances set for natural gas. We thought it worth while to ascertain, if possible, what rule or formula the substitute must obey to be interchangeable with any natural gas, or other gas, of a given heat value and gravity. By some mathematical induction along with our practical tests, we were able to derive a formula which seems to be a satisfactory guide to the heat value and gravity relation of interchangeable gases over a wide range of densities.

Gas engineers know that the momentum of a gas jet from a fixed orifice and with a constant pressure remains constant regardless of changes in density of the gas. They know also that the volume of primary air entrained in an atmospheric burner is proportional to this momentum. Hence, with gas pressure remaining constant, the amount of air entrained in a given burner will remain constant regardless of gravity. From this we may conclude that the only thing required to get uniform combustion from the burner would be to keep the B.t.u. rate per hour constant, or practically so.

Since the volume of gas delivered by a given orifice at constant pressure varies inversely as the square root of the gravity, the heat value must be varied directly as the square root of the gravity to keep the B.t.u. rate constant.

Thus the volume delivered by a given orifice at constant pressure will be

$$V = \frac{Ka}{\sqrt{G}},$$

in which

K = a constant derived from the orifice coefficient and the pressure used;

a = port area;

G = specific gravity.

Now if the heat value, H, is varied directly as G, we have the expression,

$$\frac{H}{\sqrt{G}} = C, \text{ a constant}$$

Solving for H, we have $H = C\sqrt{G}$. Now, the hourly B.t.u. rate of the burner equals the volume of gas passed times its heat value,

or $$\text{B.t.u.} = \frac{Ka}{\sqrt{G}} \times H,$$

but $H = C\sqrt{G}$. Hence,

$$\text{B.t.u.} = \frac{Ka}{\sqrt{G}} \times C\sqrt{G} = KaC.$$

Since K, a, and C, are constants, their product is a constant. Hence, if the heat value and gravity of the gas are varied in the ratio here outlined, the hourly B.t.u. rate will remain unchanged regardless of what mixture of gas is used.

Hourly B.t.u. Rate Dependent Upon Volume of Air Burned: When the paraffin hydrocarbons, such as methane, ethane, propane and butane are burned in air, their gross heat value is directly proportional to the volume of air or oxygen consumed. Looking at the problem from another angle, we may say that the "combustible," oxygen, has a constant heat value when burned with these hydrocarons. The following tabulation will help us to see just what that heat value is.

Gas	Gross Heat Value	Cu. Ft. Oxygen Burned per Cu. Ft. of Gas	B.t.u. per Cu. Ft. Oxygen
Methane	1009	2.0	504.5
Ethane	1764	3.5	504.0
Propane	2521	5.0	504.2
Butane	3274	6.5	503.7
Average B.t.u. per cubic foot of oxygen			504.1

504.1 divided by 4.83 = 104.4 B.t.u. per cubic foot of air.

Now, if the momentum of a gas jet is constant for a given orifice and a given pressure, regardless of gravity variations, the volume of primary air entrained will be constant. To simplify our reasoning, let us assume that

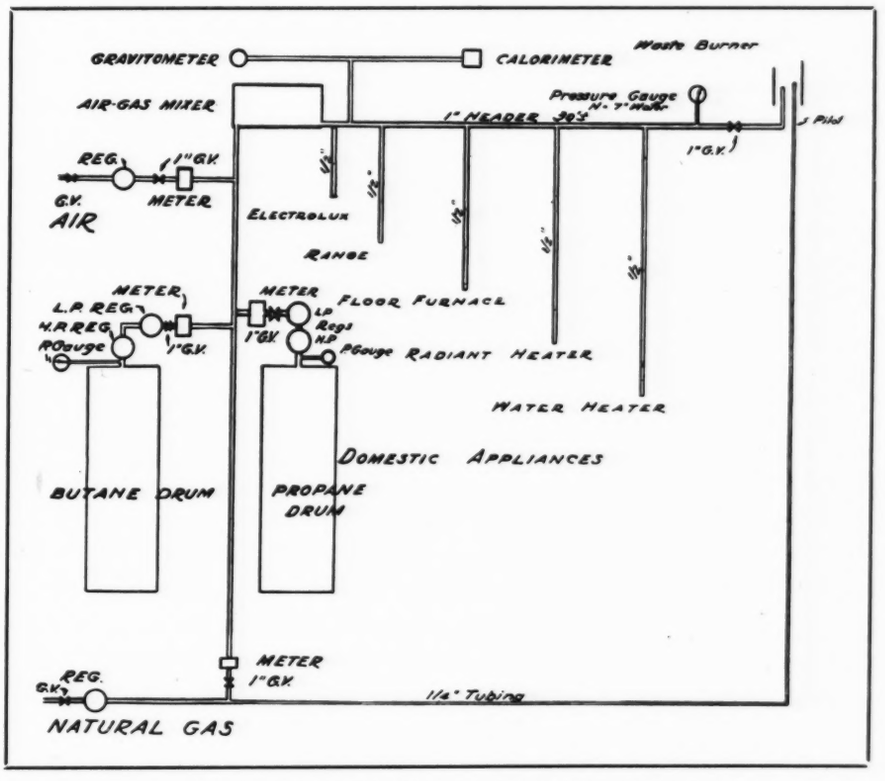


FIG. 1. Diagram showing the essentials of the test set-up.

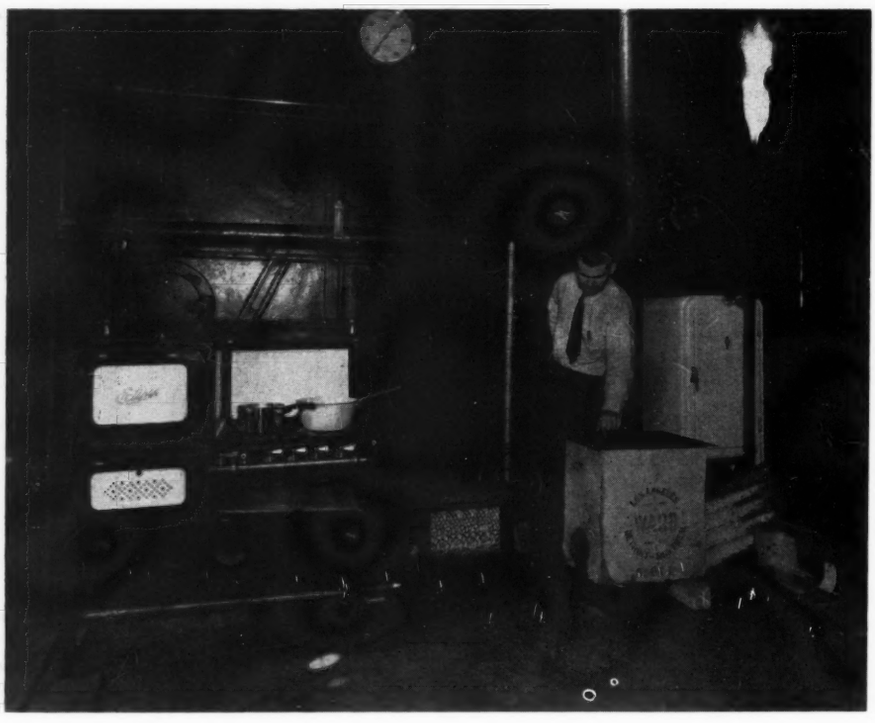


FIG. 2. Representative appliances were used in the test set-up.

enough primary air is entrained for complete combustion. If air entrainment is the same, total B.t.u. capacity of the burner must remain the same to burn this quantity perfectly. And as stated above, to keep B.t.u. output for a given burner constant for gases of different specific gravity, the heat value per cubic foot of gas must be varied directly as the square root of the gravity, or so that

$$\frac{H}{\sqrt{G}} = C, \text{ a constant,} \qquad (1)$$

in which H = heat value per cu. ft. of gas,
G = gravity of gas,
C is a constant.

Graphic Comparison of Gases: During the period we were making these tests, we found that the test location was served with two distinct grades of gas at different times. One grade had a heat value of 1120 B.t.u. and a specific gravity of .65; the other grade had a heat value of 1065 B.t.u. and a specific gravity of .71. The respective constants for these two gases are as follows:

$$\text{Gas No. 1} \quad C = \frac{H}{\sqrt{G}} = \frac{1120}{\sqrt{.65}} = 1389 \qquad (2)$$

$$\text{Gas No. 2} \quad C = \frac{H}{\sqrt{G}} = \frac{1065}{\sqrt{.71}} = 1264$$

Referring to the chart, Fig. 3, the point No. 22 at the lower left hand corner represents Gas No. 1. The broken-line curve through this point, bearing upward and to the right, represents the value of C-1389, for all gases of heat values up to 1750 B.t.u. To find the correct heat value for a gas having a given gravity, find this value on the gravity scale, follow the vertical line upward to the C curve. From this point of intersection follow the horizontal line to the left and read the heat value on the B.t.u. scale. Or the gravity to correspond with any heat value may be found by working in the reverse manner.

To state it another way, the gravity and heat value represented by any point on the curve have the relation

$$\frac{H}{\sqrt{G}} = 1389.$$

Hence, according to the line of reasoning set forth above, any gas whose heat value and gravity lines intersect on this curve will burn comparably to Gas No. 1 because it will pass the same B.t.u. per hour through a given orifice and the jet of gas will entrain the same volume of primary air. Similarly, any gas whose heat value and gravity lines intersect on the curve drawn through the point No. 23 will burn comparably to Gas No. 2, whose heat value and gravity stand in the relation

$$\frac{H}{\sqrt{G}} = \frac{1065}{\sqrt{.71}} = 1264.$$

Atmospheric Burners Require Different Mixture: The broken-line curves, Fig. 3, represent correct values of C, for burners in which all or practically all of the combustion air is entrained as primary air. This formula has been used by some gas engineers as a guide for mixing gases for domestic consumption.

Now, the ordinary appliance burner does not entrain nearly all of its combustion air as primary air. A test by the Bureau of Standards made in 1921 revealed that the best results are obtained from an atmospheric burner when the entrainment of primary air is such as to give the mixture inside the burner a heat value of 175 B.t.u. These tests were made on coal gas and carbureted water gas of heat values ranging from 500 to 600 B.t.u. Later, R. B. Harper, of the Peoples Gas, Light & Coke Co., Chicago, found the same to be true for high B.t.u. oil gas and for natural gas. As to why this is true for gases of such widely different gravity and heat values, is an interesting question, indeed, but is beyond the scope of this report. We are content to accept the findings of recognized authorities on the subject.

Assuming that 175 B.t.u. is the ideal heat value of the mixture inside the burner, we may proceed with our reasoning as follows:

Total volume of the mixture per cubic foot of gas used will be H divided by 175. The volume of primary air will be

$$\frac{H}{175} - 1, \text{ or } \frac{H\text{-}175}{175} \text{ cu. ft.} \qquad (3)$$

Since primary air is proportional to the momentum of the gas stream, we may say that

$$M' = Fx\frac{H\text{-}175}{175}. \qquad (4)$$

in which M′ = momentum of gas stream per cubic foot of gas passed per second,
F = a factor,

$$\frac{H\text{-}175}{175} = \text{cu. ft.}$$

of primary air entrained per cubic foot of gas passed.

The volume of gas per second passed through a given orifice may be expressed as:

$$\text{Volume} = \frac{Ka}{\sqrt{G}}, \qquad (5)$$

in which K is a constant derived from the basic coefficient of the orifice and the pressure-drop through the orifice,
a = orifice area,
G = the specific gravity of the gas.

The velocity of gas through the orifice = volume passed per second ÷ orifice area =

$$\frac{Ka}{\sqrt{G}} \div a = \frac{Ka}{a\sqrt{G}} = \frac{K}{\sqrt{G}} \text{ ft. per sec.} \qquad (6)$$

Now, the momentum of this gas stream

$$= \frac{\text{weight x velocity}}{g}, \qquad (7)$$

in which

g = the acceleration of gravity.

Weight = Volume x G x D,

in which

D = density of air.

As stated above,

$$\text{velocity} = \frac{K}{\sqrt{G}} \qquad (6)$$

and

$$\text{Volume} = \frac{Ka}{\sqrt{G}}. \qquad (5)$$

Substituting these values in (7) we have

$$M = \frac{Ka}{\sqrt{G}} x G x D x \frac{K}{\sqrt{G}} \div g = \frac{K^2aD}{g} \qquad (7)$$

Now, if M is the momentum of the gas stream, then M ÷ volume in feet per second will be the momentum per cubic foot of gas passed. Hence,

$$\frac{K^2aD}{g}(7) \div \frac{Ka}{\sqrt{G}}(5) = \frac{K^2aD}{g} x \frac{\sqrt{G}}{Ka} = \frac{KD\sqrt{G}}{g} = \qquad (8)$$

M′ = momentum per cu. ft. of gas passed.

But by (4) $M' = F \times \left(\frac{H-175}{175}\right)$,

hence

$$\frac{KD\sqrt{G}}{g} = F x \frac{H-175}{175}.$$

Transposing,

$$\frac{175KD}{gF} = \frac{H-175}{\sqrt{G}}.$$

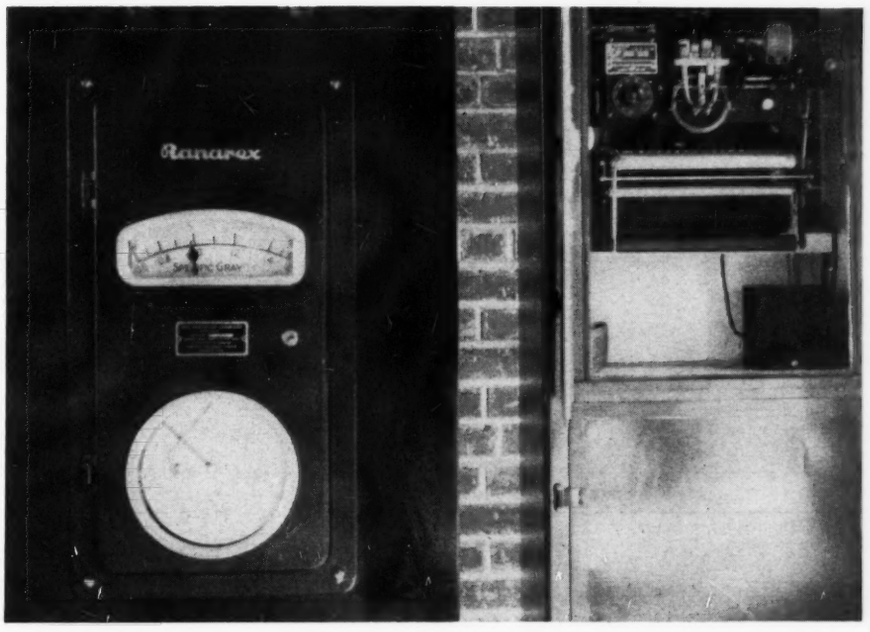


FIG. 4. Recording gravitometer and recording calorimeter are placed side by side to facilitate the proper correlation of gravity and heat.

Since each factor in the expression $\frac{175KD}{g\,F}$ is constant, the whole expression will remain a constant which we may call C.

$$\text{Hence,} \frac{H-175}{\sqrt{G}} = C. \qquad (9)$$

This has been a prolonged bit of mathematical juggling, but we have emerged with the formula we wanted. Now, if we keep the heat value and gravity of our mixed gases in the relation expressed by (9) and have once set our appliances to give a mixture of 175 B.t.u. per cubic foot in the burners on one of the gases, they will maintain the same burner mixture for all gases of whatever heat value.

This is shown graphically on the chart, Fig. 3. The heavy-line curve through point No. 22 gives corresponding heat values and gravities of comparably burning gases up to 1660 B.t.u. heat value. In other words, if appliances are set to give the 175 B.t.u. mixture in the burner on natural gas No. 1, each gas whose heat value and gravity lines intersect on this curve will do the same.

Likewise, the heavy-line curve through point No. 23 determines relative heat value and gravity for gases that will burn comparably with gas No. 2.

It will be observed, from Fig. 3, that this formula (9) indicates somewhat leaner mixtures than formula (1). And it so happens that our tests show formula (9) to be the more aecurate. The numbered performance points on the chart were plotted at actual gravities and heat values, and notes of performance made alongside. When the broken-line curves were plotted from formula (1) it was noted they indicated tests 7 and 15 should be intermediate in burning characteristics between gases Nos. 22 and 25. But, in fact, they gave decidedly richer flames than even gas No. 22. No. 15 was too rich for use at all. Then Nos. 1, 2, and 27, which made excellent fires, were shown to be de-

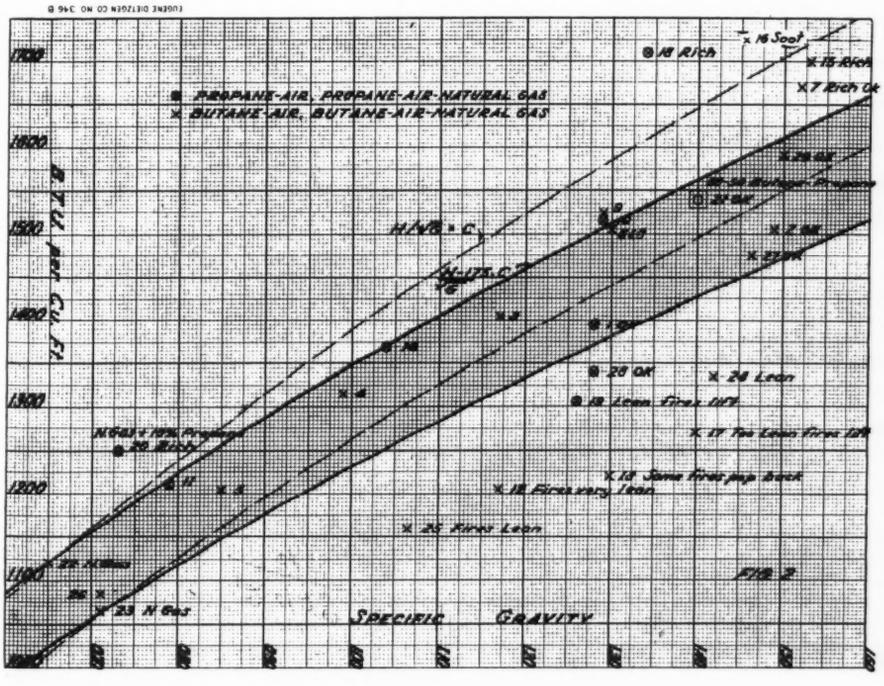


FIG. 3. Mixture curve.

TABLE No. 1*

Test No.	Volume Percentage from Meter Readings: Air %	N. Gas %	Butane %	Propane %	Gravity: Per Renarex	Gravity: Calculated	B.t.u. per cu. ft. Heat Value: Per Calorimeter	B.t.u. per cu. ft. Heat Value: Calculated
1	43.5	....	....	56.5	1.28	1.283	1397	1393
2	54.0	....	46.0	....	1.49	1.474	1506	1508
4	21.2	59.1	19.7	....	.99	1.00	1316	1295
5	13.0	76.2	10.7	....	.85	.851	1202	1192
9	36.8	26.6	36.6	....	1.29	1.283	1524	1496
10	40.8	....	....	59.2	1.30	1.296	1516	1487
12	41.1	32.8	26.2	....	1.17	1.172	1205	1207
13	53.8	13.1	33.1	....	1.30	1.30	1221	1223

*Note the close correlation between meters, gravitometer, and calorimeter.

TABLE No. 2

Test No.	% Air	% Butane	% Propane	% N. Gas	Heat Value	†Gravity	Quality of Combustion and Other Remarks
			Good Combustion				
1	43.5	....	56.5	....	1397	1.28	Perfect fires.
2	54.0	46.0	....	....	1506	1.47	Perfect fires. Sharp cones.
3	32.7	29.1	....	38.2	1405	1.17	Perfect fires.
4	21.2	19.7	....	59.1	1316	.99	Perfect fires.
5	13.1	10.7	....	76.2	1202	.85	Perfect fires.
6	37.1	37.5	....	25.4	1505	1.30	Good fires. Tends to be rich.
11	8.24	....	10.0	81.75	1213	.79	Perfect fires.
10	40.8	....	59.2	....	1516	1.30	Perfect fires.
14	17.9	....	25.0	57.1	1268	1.04	Perfect fires.
9	36.8	36.6	....	26.6	1524	1.29	Good fires.
21	46.7	26.65	26.65	....	1543	1.40	Perfect fires.
22	....	....	....	100.0	1120	.65	Perfect fires.
23	....	....	....	100.0	1065	.71	Good fires.
			Rich Fires				
20	....	....	10.0	90.0	1250	.76	Slightly rich.
18	31.9	....	68.1	....	1708	1.34	Too rich. Soot.
16	46.0	54.0	....	....	1768	1.55	Too rich. Soot.
15	48.0	52.0	....	....	1700	1.53	Rich. No soot.
7	49.0	51.0	....	....	1667	1.52	Rich but usable.
			Lean Fires				
12	41.1	26.2	....	32.8	1205	1.17	Too lean. Not usable.
13	53.8	33.1	....	13.1	1221	1.30	Too lean. Some fires pop back.
19	51.0	....	49.0	....	1305	1.26	Lean. Fires begin to lift.
17	61.2	38.8	....	....	1272	1.40	Too lean. Fires lift.
24	59.2	40.8	....	....	1336	1.42	Too lean for regular use.
25	31.4	19.9	....	48.7	1161	1.06	Pretty lean, barely usable.

Heat value as determined by calorimeter or calculated from the gravity or meter readings.
†Gravity as shown by Ranarex machine.

cidedly lean by the formula (1) curves.

When, however, the formula (9) curves were plotted, it was found that each test performance point falling between these curves had given excellent fires, those falling above the upper curve were rich, and those falling below the lower curve were lean. So, apparently, the Bureau of Standards figure of a burner mixture having a heat value of 175 B.t.u. per cubic foot performs very well, indeed, in the average appliance. We find that gas mixtures obeying the formula

$$\frac{H-175}{\sqrt{G}} = C \qquad (9)$$

give much better results at the higher heating values than do mixtures obeying the formula

$$\frac{H}{\sqrt{G}} = C \qquad (1)$$

We therefore plan to use (9) to guide us in using butane-air, propane-air, or butane-propane-air mixtures.

Naturally, we would not maintain that each correctly adjusted appliance would be found to carry a 175 B.t.u. per cubic foot mixture in the burner head. We believe that the ideal richness of this mixture would be determined by the size of holes in the head, the pressure within the head, the molecular weight of the gas used, and possibly other factors. Due, however, to the findings cited above, we believe that if we are to control the character of combustion by the richness of the primary mixture, we may as well strive for a mixture that has been found satisfactory for the average appliance, using a wide range of fuels.

We hope our readers will bear in mind that our gas mixing formula and comparison curve were developed solely as a practical working guide for the plant operators, to solve our own local mixing problems. Our experience indicates that it is sufficiently accurate for the gases of the paraffin series. In our calculations no effort was made to take into account the rate of flame propagation or other factors that might necessarily enter into a universal interchangeability formula.

Maintaining the Correct Mixture: Since mixtures falling on the upper curve are not too rich and those falling on the lower curve are not too lean, any mixture falling in the shaded area, Fig. 3, should be satisfactory for use. In our butane-air mix plant an effort will be made to keep the mixture about midway in the shaded area. Then a few points deviation one way or the other in either gravity or heat value will not cause any trouble in domestic appliances, assuming that these are in good adjustment.

Though we have used only a few million cubic feet of the mixed gases at the time this is written, our experience indicates that trouble with the mixture is likely to arise from appliances that are slightly out of adjustment on natural gas. This is especially true of range top or water heater burners that are set rich. Such a burner will give a smokeless but lazy blue fire on natural gas. The fire is usable and causes the housewife no concern. But when the butane-air mixture is turned into such a burner it will likely show a distinct yellow tip on the inner cone. While this fire may be just as efficient as the lazy natural gas fire and may not even make soot on her pots, those bright yellow spots are so conspicuous and so unusual that she is certain something is wrong, and places a trouble call immediately.

Since our method of controlling the mix is simply a matter of correlation between heat value and gravity, our control board includes a recording calorimeter and a recording gravitometer placed side by side, (Fig. 4). This enables the operating engineer to see at a glance just what sort of gas he is producing at any time, and gives us a permanent record of great value to us in finally determining just how rich a mixture results in fewest trouble calls.

Since our problem is one of securing an emergency gas supply rather than one of producing an economical substitute for natural gas, our present effort will be to supply that mixture, however rich, that will result in fewest trouble calls from domestic and commercial users.

It is possible that some types of industrial burners would be adversely affected by the substitute gas, but we are not greatly concerned about this possibility. In the first place, when we are making routine trial runs at low output of mixed gas, any given industrial consumer will get only a small proportion of it along with the natural gas. If an actual gas shortage arises and we must supply a greater proportion of the mixture, most industrial users will be cut off anyway.

Heat Value Alone No Clue to Burning Characteristics of a Gas: On the chart, Fig. 3, note test No. 20. This gas had 1250 B.t.u. and burned very rich; in fact, made a smoky fire. Then observe test No. 19. This gas had the higher B.t.u. of 1305. Yet it was so lean that the fires would lift and go out.

It is evident from a glance at the relative positions on the chart, that No. 19 is lean, due, not to low heat value, but to high gravity. Or, take tests No. 5 and No. 12. Each gas has a heat value of 1205 B.t.u., yet No. 5 is an ideal burning mixture, while No. 12 puts the fires out as often as they are lighted. Again, the difference is solely one of gravity. As you will note from the chart, and as we observed from dozens of tests not plotted here, it is possible to adjust a burner for 1065 B.t.u. natural gas and get the same stable and clean fires from gases of any heat value up to 1600 B.t.u.; that is, provided the proper relation between heat value and gravity is maintained.

Effects of Mixing The Substitute Gas With Various Proportions of Natural Gas: Assuming that we can derive a butane-air or propane-air mixture that is a satisfactory substitute for natural gas, what will be the effect of mixing this with various proportions of natural gas? It is possible to demonstrate mathematically that if the relation H-175 divided by the square root of G=C is identical for the natural gas and for the substitute, then it will remain the same for any mixture of the two, and, hence, the burning traits of the mixtures will remain unchanged.

We have this clearly brought out on the chart. Note that test No. 10 is closely comparable to test No. 22, natural gas. Now, when the No. 10 substitute is diluted with 57% natural gas, we get a mixture like test No. 14, and if we mix the No. 10 substitute with 81.75% natural gas, we get test No. 11. By their position on the chart, you can see at a glance that the burning traits of No. 11 and No. 14 are about identical with those of No. 22 and No. 10.

The same relation will be observed between tests No. 29, 6, and 4, for butane-air and natural gas mixtures.

Hourly B.t.u. Rate of Appliances on the Substitute: A question of importance to the housewife is whether the substitute gas will materially affect the heating capacity of her appliances. Tables Nos. 3 and 4 show that any difference of heating capacity on the various gases is so small as to be negligible. Theoretically, gases of the higher heating values conforming to formula (9) will give a slightly reduced B.t.u. rate per hour. This can be compensated for by keeping the substitute gas a little rich, or falling toward the upper edge of the shaded area.

Customer's Bill Reduced on Higher Heat Value Gases: For the same monthly B.t.u. consumption, the average consumer will naturally use a smaller volume of the higher heat value gas. In short, the volume consumed will vary inversely as the heat value—the higher the heat value, the smaller the volume used.

Effect of Heavier Gases on Network Pressures: If equal volumes of the heavier gases had to be distributed in a heavily loaded network, pressure gradients might be so high as to cause serious low pressure trouble. However, just as the heavier but richer gas will pass the same B.t.u. rate through an appliance orifice for the same pressure drop as will the lighter but leaner gas, so it is in the distribution system. If the heavier substitute has the correct relation between heat value and gravity so as to give comparable combustion, it will likewise give practically the same pressure gradient in the pipe line per B.t.u. of heat value transmitted. Hence, with a correctly proportioned substitute gas, there should be no unusual system pressure drops.

TABLE No. 3

		Natural Gas 1120 B.t.u. .65 Gravity 7 in. Header Pres.	*Natural Gas Plus Butane-Air* 1460 B.t.u. 1.20 Gravity 7 in. Header Pres.	*Butane-Air Mixt.* 1508 B.t.u. 1.47 Gravity 7 in. Header Pres.
		Minutes	Minutes	Minutes
White enamel sauce pan	1 qt.	5.25	5.29	5.16
Large top burner	2 qts.	10.25	9.60	9.92
Stainless steel sauce pan	1 qt.	6.62	6.75	6.96
Small top burner.	2 qts.	14.75	13.25	13.33

Average boiling time for water with various gases.

Time is expressed as minutes required to bring the water to a full rolling boil, from temperatures of 66 to 72 degrees F. Room temperatures during the test ranged from 70 to 84 degrees F.

TABLE No. 4. COMPARATIVE HOURLY B.T.U. RATE OF VARIOUS GASES

	Natural Gas	*Butane 45.1% Air 54.9%*	*Propane 53.25% Air 46.75%*
Gas header pressure	6.6 in. No. 26 on curve	6.6 in. No. 27 on curve	6.6 in. No. 28 on curve
Cu. ft. gas per hour passed	110.8	81.4	87.1
B.t.u. per cu. ft. gas calculated	1085	1477	1337
Total B.t.u. passed per hour	120,200	120,200	*116,400

*By checking No. 28 on the curve, Fig. 3, it will be observed that the mix used was slightly lean. If using the same rate of flow, corrected for gravity, we substitute the mixture shown at No. 1 on the curve, the total B.t.u. passed per hour would have been 121,200 B.t.u. per hour, approximately the same as for the other gases.

Natural Gas Liquefaction

(A Progress Report on the Plant at Cleveland, Ohio)

THE FIRST AVAILABLE operating data on the new natural gas liquefaction plant constructed for the East Ohio Gas Co., Cleveland, is presented in this paper by Mr. Clark. A letter from W. E. Steinwedell, president, The Gas Machinery Co., Cleveland, gives further light on operation of the plant.

"It is stated in Mr. Clark's paper that the result of this plant was the ability to handle the industrial load without curtailment, whereas the plant was actually built to maintain uninterrupted service on the whole East Ohio Gas Co.'s system and which on peak days means distributing over 250 MM c. f. of natural gas, and maintenance of such uninterrupted service under these conditions has been successfully accomplished. The operating costs based on the first winter's run should not be taken in any way typical, as construction work in this case was in progress all during the operating period, the steam-piping had not been completely insulated, the same boilers also furnish steam for heating two telescopic standard gas holders and other buildings, the labor was extremely high, due to the facts that the plant started liquefying gas as soon as the liquefaction plant and one storage sphere was operative, and many of the units had to be stopped and readjusted right along due to insuffcient time or preliminary operation tests."

Previous articles pertaining to the creation and construction of this latest method of providing for standby service have appeared in the November and December, 1940, issues of GAS. Mr. Clark's paper was presented before the 36th Annual Convention of the Natural Gas Section of the American Gas Association, Dallas, Texas, May 5-7.—(Abstract by GAS.)

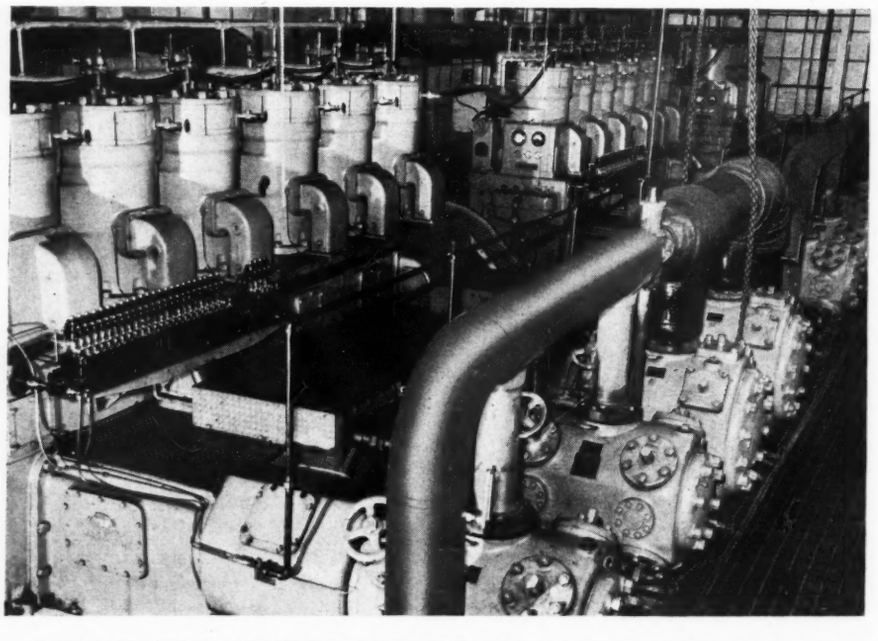
THE development of a new type of storage plant constructed by The East Ohio Gas Co. in Cleveland, Ohio, was the outcome of an idea of long standing that some method should be made available to take care of the very few days of extremely heavy load encountered by any natural gas company with a large percentage of its load coming from house heating, without the large expense of laying additional pipe lines.

An idea was developed by H. C. Cooper, then president of the Hope Natural Gas Co., that, if a practical method of storing natural gas as a liquid could be developed, the enormous reduction in space occupied, about 600 to 1, might make liquid storage the answer to this problem.

With this idea in view, laboratory experiments were carried out for over a year on the behavior of liquid nitrogen and the effectiveness of various materials as insulating material to keep heat from filtering into a tank filled with this liquid at a temperature of around 300° F. below zero. Following the laboratory experiments, a small pilot plant was built at one of the Hope Natural Gas Co.'s plants in West Virginia, capable of reducing to a liquid around 300,000 cu. ft. per day of natural gas and a storage tank holding slightly under a million cu. ft. of gas in the liquid phase. This plant was operated successfully for about six months, and showed that the idea was perfectly practical and that the loss due to evaporation would not be excessive. As a result of this experience, it was finally decided by the management that it was practical to build a similar plant on a large scale in the City of Cleveland to take care of rapidly rising sales, occasioned by the steadily increasing number of domestic consumers.

At that time careful studies were made of two or three different methods of liquefying the gas, and it was decided that at least two of them had about equal possibilities. However, after weighing the disadvantages and advantages of each, it was finally decided to use the Cascade System where the temperature is progressively reduced by using; first an ammonia condensing circuit, then an ethylene condensing circuit, and finally a natural gas condensing and expansion circuit.

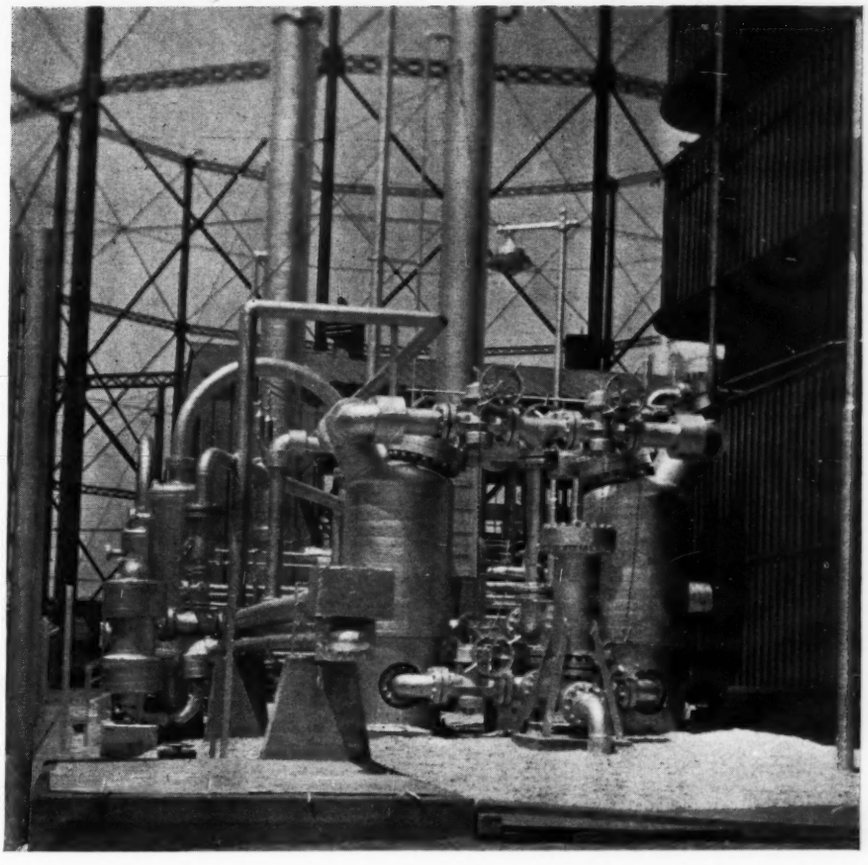
Before attempting to liquefy the gas, it was found necessary to completely remove all traces of carbon dioxide and water, which was done by passing the gas through an amine solution and finally drying it with granulated alumina. It was also found to be of very great importance to remove every trace of lubricating oil put into the gas while being compressed. The plant was designed with a capacity to turn into a liquid 4,000,000 cu. ft. of natural gas per day, and to do this required 3250 hp. divided up into 600 hp. for raw gas compression, 950 hp. for recycling gas compression, 1200 hp. for ethylene



A Clark four-cylinder 500 BHP supercharged "angle" compressor performs the first refrigerating phase, using ammonia. Two Clark 600 BHP "angles," totaling 1200 BHP, then perform the second refrigerating phase, using ethylene. All three of these units are fitted for two-stage compression.

By JOHN A. CLARK

Chief Engineer,
Hope Natural Gas Company,
Clarksburg, W. Va.



The two dehydration tanks and equipment in the foreground and the carbonic acid extraction equipment and towers in the background.

compression and 500 hp. for ammonia compression.

The plant was practically completed, in all essentials, on January 29, 1941, and operation was started at once, and on February 7 the first production of liquid gas was started. This late start, which was due to the inability of some of the equipment manufacturers to make deliveries on schedule, fortunately, did not cause any difficulty as we had a very unusual winter with no cold waves of any importance in December or January. However, the first cold wave hit on February 19, and at that time there were 15,000,000 cu. ft. of liquid gas in storage, and on February 19, 7,000,000 cu. ft. were regasified and put back onto the lines and about 4,000,000 cu. ft. on February 20. On February 21 the weather moderated, and it was possible to go back to liquefying again, and on March 17, when the most severe cold wave of the winter hit Cleveland, there were 50,000,000 cu. ft. in storage.

During the two days of this cold spell, the plant fully justified its construction, as 16,000,000 cu. ft. were regasified and put back into the city plant on March 17 and 5,000,000 cu. ft. on March 18. Due to the inability to foresee what was ahead in the way of weather, and the desire to conserve all liquid possible, only the minimum amount necessary to keep operating conditions normal was used.

The result to the gas company of this plant was the ability to handle without curtailment an industrial load of over 40,000,000 cu. ft. per day, which most certainly would have been curtailed or shut off for at least two days, with the resultant loss of confidence on the part of the industrial users. Due to the wide variation of the hourly load curve for any one day, it was found that the use of 25,000,000 cu. ft. of liquid during the daylight hours would enable the company to carry an extra connected load of around 40,000,000 cu. ft. per day.

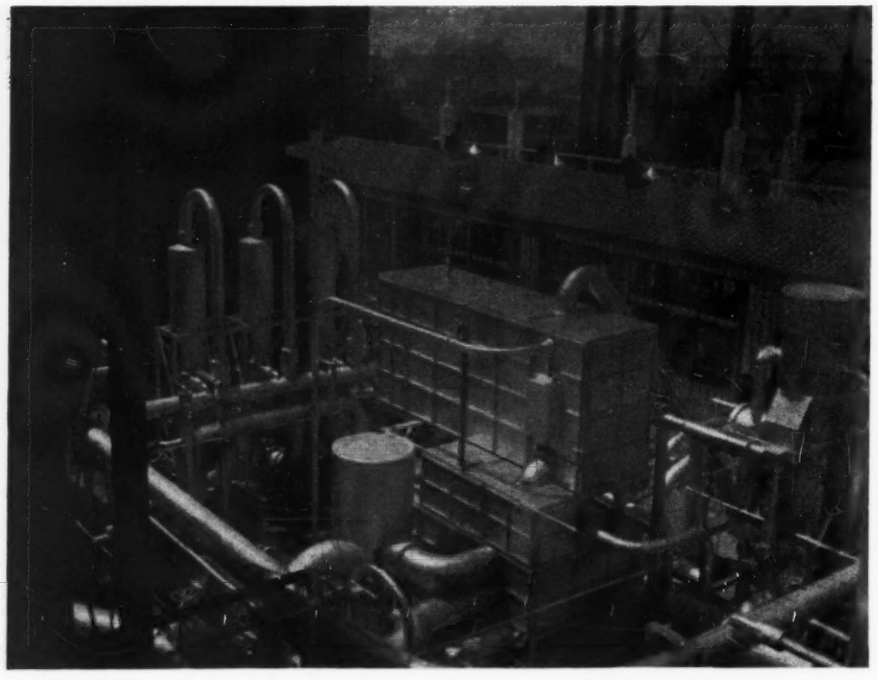
The regasification of the liquid was not started until the pressure in the city plant had started to decline materially, and its use was apparent in a few minutes, and eventually extended back through the main city belt lines over 15 miles. It also developed that the gas fed directly at the point of consumption was much more useful than if fed at any other point, as here it was all clear gain, with no added congestion in transmission lines loaded to capacity.

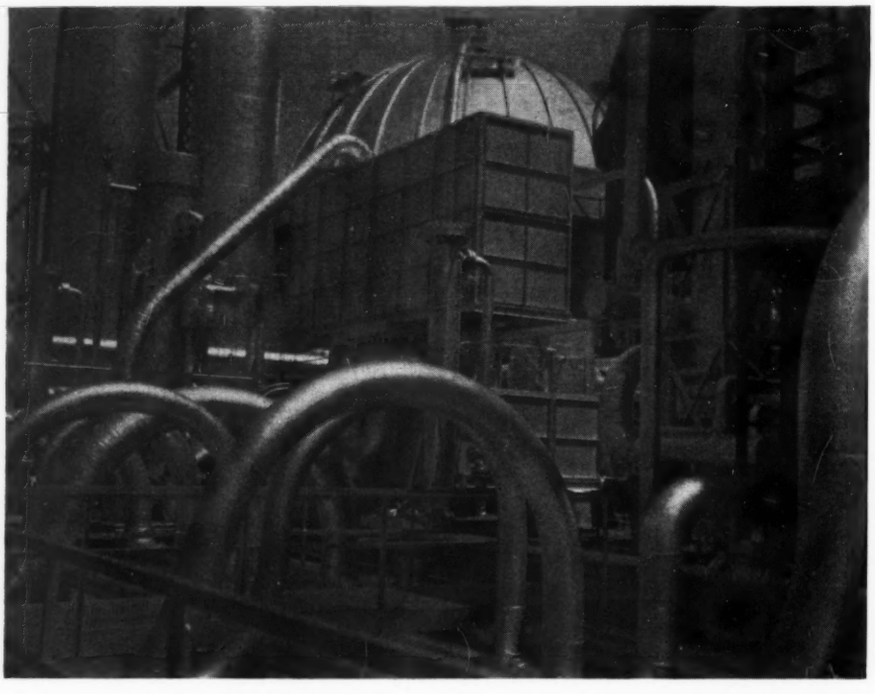
Analysis of Costs

In regard to the cost of the plant, the figures are not very complete at the present time, due to the fact that the work was not entirely completed last winter, and several construction accounts are not closed out at this time. However, the final cost will run around $1,250,000 divided roughly into: engines with foundations and buildings, $260,000, the three spheres and piping, $420,000, and the remainder in piping, cooling tower, heat exchangers and auxiliary equipment. Also included was an already installed boiler plant which was reconditioned and put in service.

As can easily be appreciated, a great many of the design ideas were entirely theoretical, and every control and safeguard was installed. With the practical experience of the design and operating of this plan, a considerable amount of expense can be eliminated in the next plant. Also a plant built in the heart of a large city required very efficient and expensive muffling for the gas engines, unusual fire protection and also building under union closed shop conditions. Built under the conditions of the average compressing station, the first cost for the next plant can be materially reduced.

Due to the short time the plant was actually liquefying, and the fact that construction work was going on simultaneously, there are no reliable figures on operating costs, but the experience obtained allows a very good estimate of the probable cost of liquefaction and regasification. The plant was designed for and will make, after some tuning up, 4,000,000 cu. ft. per day of the liquid. To fill a storage of 150,000,000 cu. ft. requires a run of 38 days or, allowing for starting and having to cool the piping and tanks down and allowing for a few days delay, say 50 days. To operate the equipment requires four men on a shift, and figuring the fuel gas at an average cost of 38 cents per M c.f., the cost of filling the three tanks will be: labor $6000, fuel gas $13,700, oil, ethylene and supplies $4000, totaling $23,700. The $23,700 divided by 150,-





ABOVE: View from the platform of Sphere No. 3, showing (at left) the three regasifiers with the water cooling tower in background; (center), the primary liquid tank, upper box containing the two main cooling units and lower box containing nitrogen tank and heat exchangers; and (right), the vertical ammonia-ethylene heat exchanger. In the background is the compressor and machinery building, with Maxim silencers extending above the roof. BELOW: General view from platform of machinery building showing vertical ethylene storage tanks, heat exchangers, and cooling equipment. Sphere No. 1 in background.

000,000 cu. ft. equals 15.8 cents per M.c.f.

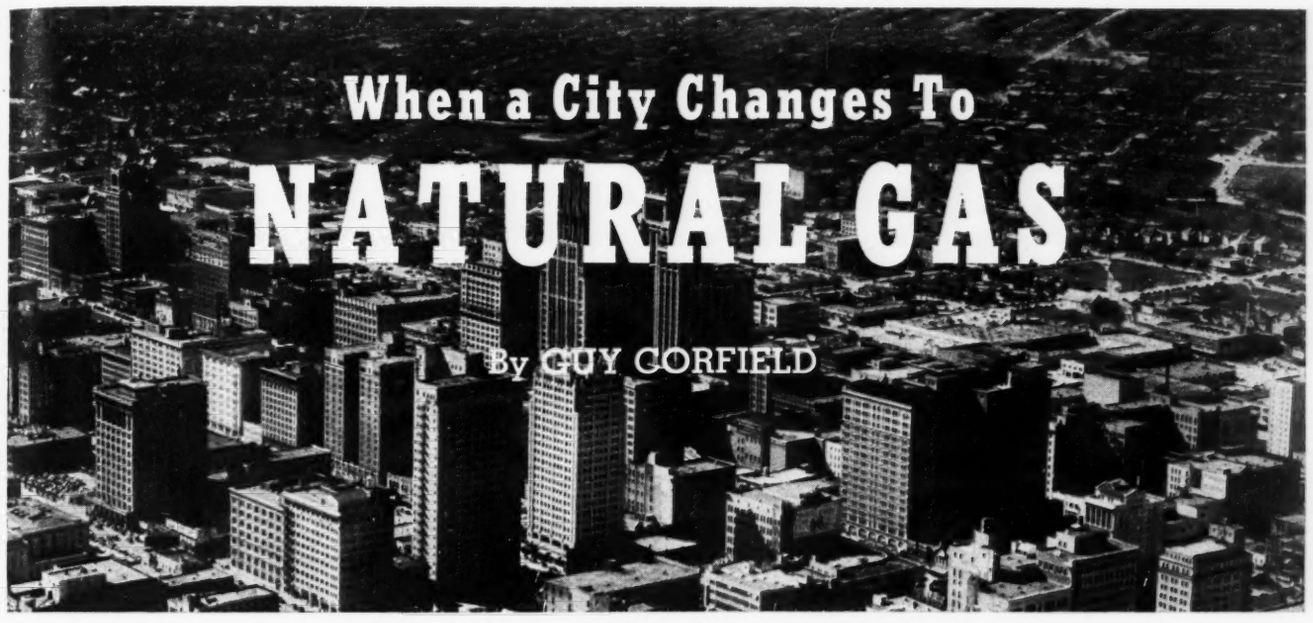
Now assuming that the plant is started up in October and the storage is full by December 1, to keep the plant warm for four months will require 38,000 gallons of fuel oil for making steam, while to regasify the 150,000,000 cu. ft. of liquid will require 462,000 gallons of fuel oil or a total of 500,000 gallons, equal, at four cents per gallon, to $20,000. The labor cost of keeping a crew available during the four months will be $12,000, or a total of $32,000. This divided by 150,000,000 cu. ft. gives 21.3 cents per M c.f. for regasification, making a total for liquefaction and regasification of 37.1 cents per M c.f.

However, we had expected, that due to a cold wave seldom being over three or four days duration and then followed by about a week of warmer weather, that it would be possible after a cold spell to refill the tank and to use during a season 300,000,000 cu. ft. of liquid. To do this will require an operating cost for labor, oil, fuel, gas, etc. of $73,400, or dividing by 300,000,000 cu. ft. a cost of 24.4 cents per M c.f. Until the plant has made a full season's run, it will be impossible to say exactly which condition will be the actual one, so, for the present, it seems safe to say that the operating cost will be somewhere between these two figures. In addition to the operating costs, of course, there will have to be added the fixed charges on the first cost of this plant.

Evaporation Data

One other feature of the plant which was very much discussed during the design was the rate at which heat from the atmosphere would filter into the inner tank through three feet of cork insulation to the liquid at a temperature of around 260° F. below zero, and what the evaporation would be per day while the tanks were standing full of liquid, waiting to be used. From the experimental work and the pilot plant it had been figured out that there would be a heat transfer of about .25 B.t.u. per cu. ft., and using these data we figured that about 500,000 cu. ft. would evaporate per day. At the present time, one tank has stood nearly full of liquid for about three weeks, with all the evaporation from it and the connecting piping going through a calibrated meter. During this time, which included several fairly warm days, the evaporation varied from 105 to 112 M c.f. per day. Therefore, it seems quite safe to say that the evaporation with all three tanks full with be around 350,000 cu. ft. per day. This would mean that, with all three tanks full, not much over one-half of the liquid would evaporate in the course of a year.

In conclusion, I think I can say that the management feels that this plant has operated successfully for its first year, and has fully justified the money invested in it. Under certain circumstances, there seems to be a definite place in the industry for a plant of this type, and it seems to particularly suit a company with a long supply line and a heavy house heating load. However, it must be realized that such a plant is not a "cure-all." and each one must be individually engineered.



PART II. The Utilization Aspects of Making the Changeover from Manufactured to Natural Gas

IN this second article dealing with the changing over of a distribution system from manufactured to natural gas, we will take up the various phases of the utilization aspects of such a changeover. Part I of this series, which dealt with the technical and distribution aspects of changeover procedures, was published on page 33 of the May, 1941, issue of *GAS*.

I. GENERAL METHODS OF APPLIANCE ADJUSTMENT

As mentioned in Part I of this series, there are several different ways in which actual change from old to new gas can be carried out, involving both the manner of introduction of the new gas into the system, and the time at which the adjustment or adjustments to the appliances are made. The factors that control or influence the choice of methods are the relative difference in combustion characteristics of the two gases, the shape and size of the system, and its flexibility from the standpoints of pressure, volume, direction of gas flow and points of inlet. The records of changeovers in the past disclose an opportunity for considerable resourcefulness and ingenuity in selecting the most convenient method to fit a given set of conditions, and the most typical of this method will now be discussed.

1. Appliance Adjustment Before Change in Gas Supply: Within reasonable limits, if a burner is adjusted to a certain B.t.u. gas at a certain pressure, and the pressure is then raised, the effect is the same as if a higher B.t.u. gas had been introduced at the original pressure. This effect can be made use of in a changeover under certain conditions of old and new gas, and if service pressures can be adjusted with relative ease, this method provides considerable convenience and flexibility (20). While the old gas is still being distributed, the pressure can be raised an amount to give the equivalent effect of the new gas; the appliances can then be adjusted to good performance; and the new gas can then be introduced and the pressure returned to normal. Only a relatively small number of adjusters are necessary as they need work only in the area undergoing the pressure change; and such pressure change and adjustment can proceed over any period desired prior to the actual introduction of the new gas, until the whole system has been adjusted. Such a scheme, apart from the pressure change, involves no disruption of the general operations of the distribution system and, inasmuch as appliances are never out of adjustment except for very short periods in some instances, customers need not be forewarned and are not disturbed.

2. Appliance Adjustment During Change in Gas Supply: In some cases it may be found possible and convenient to first introduce an intermediate mixture of the old and new gas, that will perform reasonably well in appliances as adjusted to the old gas; then adjust the appliances to the other extreme so that they will still perform reasonably well on the mixture and will be in good adjustment on the new gas; and then turn in 100% new gas. (21) In this manner the appliances are never very far out of adjustment, so that the customers will not be seriously inconvenienced, even if the adjusters do not reach the premises immediately.

3. Appliance Adjustment After Change in Gas Supply: Another general way of accomplishing a changeover is to turn in the new gas and then adjust the appliances as expeditiously as possible. (3), (7), (8), (14), (23).

GUY CORFIELD

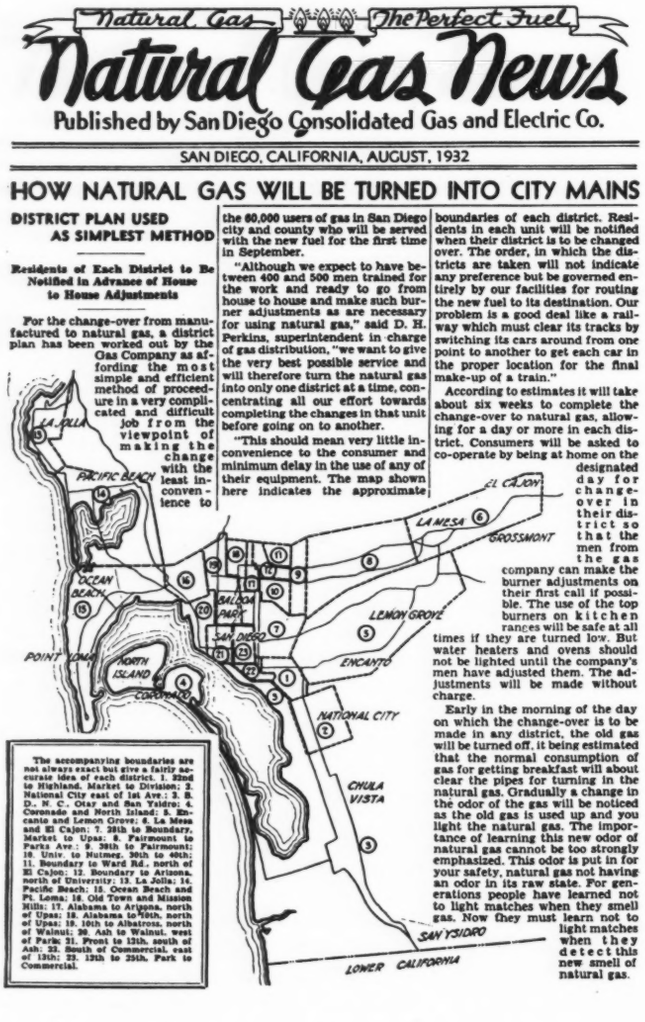
PUBLISHED ON these pages is the second in a series of articles by Mr. Corfield dealing with the problems of changing over a manufactured gas distribution system to natural gas. The first article in this series was published in the May issue of GAS, and dealt with the technical and distribution aspects of such a changeover. A third article, scheduled for publication in July, will deal with the equipment used in changeover operation and will review the history of such operations in the United States.—Editor.

This procedure is usually done by districts, especially in large areas, and requires a relatively large number of appliance adjusters. It also involves well planned publicity and customer preparation so as to obtain the cooperation of the customer during the transitory period. Under certain conditions of gas change, or where the system is not very amenable to such manipulations as intermediate gas mixtures, or pressure changes, this procedure has been considered the most effective.

4. Appliance Adjustment Before and After Change in Gas Supply: Combinations of the above methods have also been found effective. The service pressure on the old gas may be raised considerably above normal and the appliances given an intermediate adjustment; next, the new gas is turned in at a lower but still above-normal pressure and the appliances again adjusted, this time so that they will function satisfactorily on the new gas at normal pressure; finally, the normal pressure is restored. (25) This method is appropriate to sectional manipulation, and has the advantage that the customers need not be notified in advance as the appliances are never seriously out of adjustment.

Another expedient which has had some application is to make an initial appliance adjustment such that performance will be reasonably good on either the old or the new gas, followed by a final adjustment to optimum performance on the new gas (29). This expedient keeps the appliances in usable adjustment at all times, and is not exacting as regards rapidity of operation.

5. Types of Customers — Domestic, Commercial and Industrial: The various procedures just discussed apply principally to domestic appliances, and of course represent the bulk of the changeover work. They also apply to the smaller and more conventional of the commercial appliances with the exception that certain small equipment items, such as blow torches and laboratory burners, may require special attention, and even replacement. Commercial burners may also be encountered that have been specifically designed for manufactured gas, or for a particular purpose and type or size of flame, and such burners may require careful adjustment and even some elements of re-design. The location of these special jobs will be known, however, and they will be relatively few in number and can be handled by the regular inspection and service men or a specially assigned crew. Industrial customers can also be given individual attention by working out the conversion problems in advance and having the operating engineers properly instructed, or the company's engineers or should also be given to hospitals and other institutions, to be sure that no disruption occurs to essential services.



Natural Gas — The Perfect Fuel

Natural Gas News

Published by San Diego Consolidated Gas and Electric Co.

SAN DIEGO, CALIFORNIA, AUGUST, 1932

HOW NATURAL GAS WILL BE TURNED INTO CITY MAINS

DISTRICT PLAN USED AS SIMPLEST METHOD

Residents of Each District to Be Notified in Advance of House to House Adjustments

For the change-over from manufactured to natural gas, a district plan has been worked out by the Gas Company as affording the most simple and efficient method of procedure in a very complicated and difficult job from the viewpoint of making the change with the least inconvenience to the 60,000 users of gas in San Diego city and county who will be served with the new fuel for the first time in September.

"Although we expect to have between 400 and 500 men trained for the work and ready to go from house to house and make such burner adjustments as are necessary for using natural gas," said D. H. Perkins, superintendent in charge of gas distribution, "we want to give the very best possible service and will therefore turn the natural gas into only one district at a time, concentrating all our effort towards completing the changes in that unit before going on to another.

"This should mean very little inconvenience to the consumer and minimum delay in the use of any of their equipment. The map shown here indicates the approximate boundaries of each district. Residents in each unit will be notified when their district is to be changed over. The order, in which the districts are taken will not indicate any preference but be governed entirely by our facilities for routing the new fuel to its destination. Our problem is a good deal like a railway which must clear its tracks by switching its cars around from one point to another to get each car in the proper location for the final make-up of a train."

According to estimates it will take about six weeks to complete the change-over to natural gas, allowing for a day or more in each district. Consumers will be asked to co-operate by being at home on the designated day for change-over in their district so that the men from the gas company can make the burner adjustments on their first call if possible. The use of the top burners on kitchen ranges will be safe at all times if they are turned low. But water heaters and ovens should not be lighted until the company's men have adjusted them. The adjustments will be made without charge.

Early in the morning of the day on which the change-over is to be made in any district, the old gas will be turned off, it being estimated that the normal consumption of gas for getting breakfast will about clear the pipes for turning in the natural gas. Gradually a change in the odor of the gas will be noticed as the old gas is used up and you light the natural gas. The importance of learning this new odor of natural gas cannot be too strongly emphasized. This odor is put in for your safety, natural gas not having an odor in its raw state. For generations people have learned not to light matches when they smell gas. Now they must learn not to light matches when they detect this new smell of natural gas.

LA JOLLA
PACIFIC BEACH
OCEAN BEACH
POINT LOMA
NORTH ISLAND
CORONADO
BALBOA PARK
SAN DIEGO
EL CAJON
LA MESA
GROSSMONT
LEMON GROVE
ENCANTO
NATIONAL CITY
CHULA VISTA
SAN YSIDRO
LOWER CALIFORNIA

The accompanying boundaries are not always exact but give a fairly accurate idea of each district. 1. 32nd to Highland, Market to Division; 2. National City east of 1st Ave.; 3. S. D., N. C., Otay and San Ysidro; 4. Coronado and North Island; 5. Encanto and Lemon Grove; 6. La Mesa and El Cajon; 7. 26th to Boundary, Market to Upas; 8. Fairmount to Parks Ave.; 9. 30th to Fairmount; 10. Univ. to Mutmeg, 30th to 40th; 11. Boundary to Ward Rd., north of El Cajon; 12. Boundary to Arizona, north of University; 13. La Jolla; 14. Pacific Beach; 15. Ocean Beach and Pt. Loma; 16. Old Town and Mission Hills; 17. Alabama to Arizona, north of Upas; 18. Alabama to 30th, north of Upas; 19. 10th to Albatross, north of Walnut; 20. Ash to Walnut, west of Parks; 21. Front to 12th, south of Ash; 23. South of Commercial, east of 12th; 23. 12th to 25th, Park to Commercial.

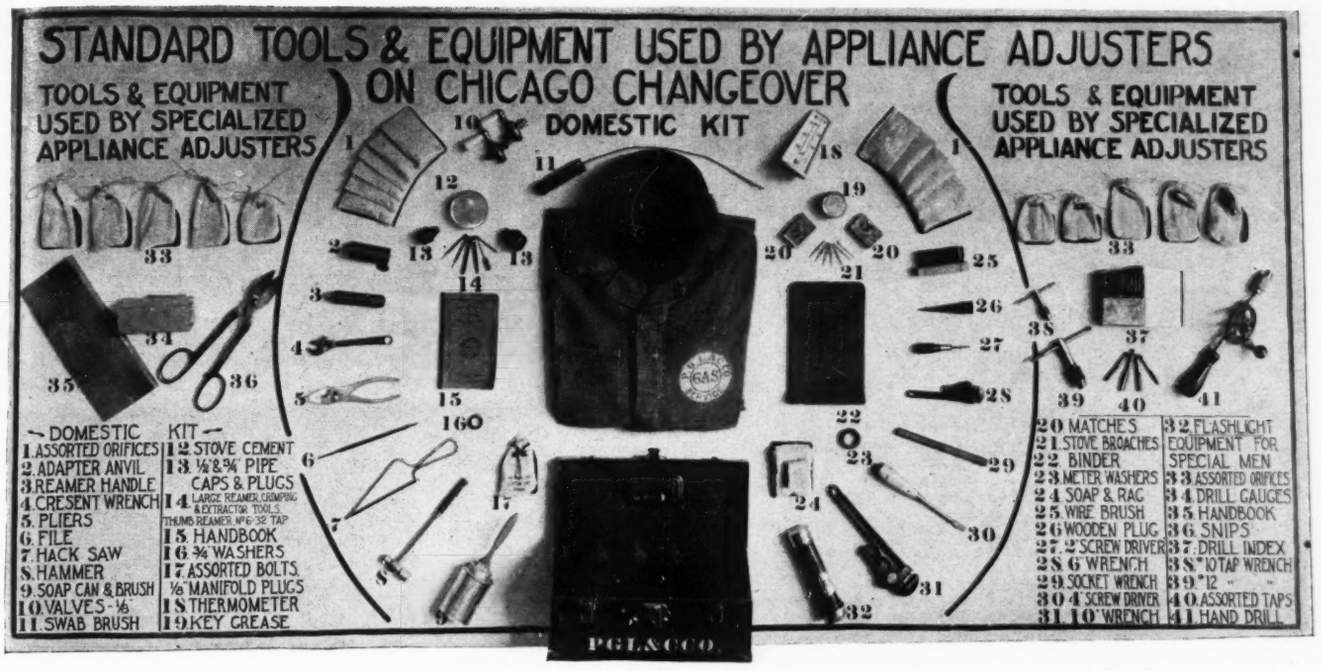
When San Diego, Calif., changed over to natural gas, a "change-over" newspaper was sent to every consumer. This issue reproduced the map of changeover districts and gave the customer salient facts concerning the procedure that was followed.

II. ORGANIZATION FOR ADJUSTMENT

1. Manpower: The number of men required for the appliance adjustment operation will depend on the selected changeover procedure as just discussed, and the area or number of meters involved as each district, or the entire system is changed. It will also be necessary to estimate the number of adjusts each man can make per day, to have enough men so that all customers can be visited with the necessary speed; approximate figures given in a later section will assist in making this estimate. Adequate supervision will also be necessary, both because of the special nature of the work and because some of the men will be newly trained and relatively inexperienced. The supervisors and nucleus of the adjustment force can come from the regular customer service organization, and the group can be supplemented by many other employees of the company who can be temporarily relieved of other duties. Experienced men can also be borrowed from other gas companies. If necessary some outside hiring can be resorted to, seeking the general characteristics of neat appearance, reasonable education and pleasant personality, and insisting on proper identification and references.

2. Training Schools: A training school should be organized, which all the men should attend until they are seen to be competent, or have demonstrated their unfitness for the work. The school should consist of a classroom where the necessary elements of personal conduct, customer approach, company policy and general information are discussed; a laboratory where the general principles of combustion, the characteristics of the old and new gas and the fundamentals of appliance adjustment are demonstrated; a shop where typical appliances can be set up, operated on both gases, and deliberately put out of adjustment so that the men can with their own hands and under the inspection of the instructors go through the adjustment performance, check for leaks, light pilots and perform all the necessary operations; and an "office" where the various forms, records and other crew organization and report details can be gone through. It will take from one week to one month to properly train a man in such a school, according to his previous knowledge of any portions of the work.

3. Supplies: Each man should be provided with an identification badge,



Layout of standard tools and equipment used by the appliance adjusters of the Peoples Gas Light and Coke Co. when the changeover was made in Chicago during the latter months of 1931.

and preferably with a uniform. He should also have a kit containing all the tools necessary to handle any conceivable adjustment or circumstance he may encounter. A typical selection of equipment is given in Table No. 1.

Adequate supplies of all kinds should be accumulated in advance and located at appropriate distributing points so that work will not be held up for lack of materials. These supplies will consist of appliance accessories and burner parts that have previously been determined as necessary, such as valves, cocks, pilot tips, pilot tubing, orifices and inserts. Certain major parts, such as replacement burners, may be deemed necessary. A sufficient stock of report forms, pencils, etc., should also be provided.

4. Crew Organization, Supervision and Control: A 10-man crew has proved to be a convenient size, as the men can work in a small area and make frequent contact with their immediate supervisor who can keep them supplied with materials and readily assist them in cases of emergency or difficulty. The crew supervisor will in turn keep in contact with his foremen through a local or central dispatch board, and by suitably planned organization and telephonic and office facilities the work can proceed smoothly and efficiently. Reports should be made and checked each day so that production can be watched and adequate records obtained.

5. Notifying Public: The extent to which it may be necessary to notify the Public in advance of the changeover will be governed by the particular circumstances. In some instances the manipulation may be such that many appliances will be far out of adjustment, and difficult and even hazardous to operate, until the adjuster can visit the premises.

In such instances it is essential to warn and educate the customers very thoroughly and in considerable detail, so that they will not only exercise caution and patience in operating their appliances, but will also be at home so that the adjuster can enter the premises on schedule. Under other conditions where the great bulk of appliances will be in good adjustment throughout the changeover precedure, practically no notification will be necessary beyond that desired for publicity, load building and other promotional purposes.

Notification and publicity can be secured through such media as the radio, newspapers, circular mailing, handbills, bill stuffers, etc. A typical example of such printed matter is shown on the preceding page.

III. ACTUAL ADJUSTMENT OPERATIONS

1. Possible Necessary Deviations from Plans: The adjustment organization should be flexible enough to take care of unforeseen circumstances and possible last minute changes in the changeover plans, although with careful preliminary study such changes should be only minor. Flexibility will, of course, be greatly assisted by reasonable reserves of manpower and materials. A source of emergency manpower could be employees engaged in other work who have been given at least the most important elements of the training course so that they can be drafted in cases of necessity. A survey and record of sources of supply and stock on hand will facilitate the obtaining of emergency material from local and nearby distributors, dealers, etc., if the company storeroom stock proves inadequate.

2. Difficulties to be Expected: Unless a recent and quite complete survey of customers equipment has been made and carefully studied by the Utilization Department, a number of unusual appliances will be encountered, ranging all the way from "homemade" devices or attachments, to appliances of foreign make and unfamiliar design. Such appliances may require considerable skill and ingenuity for adjustment, coupled with good judgment to determine whether they are worthy or capable of satisfactory adjustment or whether a "loan" appliance should be installed, a new appliance sale attempted, etc. Similarly, outmoded appliances of unexpected design will be encountered which cannot be satisfactorily adjusted to the new gas without major changes such as new burners, relocation of burners, or other expedients. There will also be the usual number of incidental difficulties which, if nothing else, will be time consuming and will sometimes require material replacements. Among these could be listed defective house piping and appliance piping, tubing and valves;

A group of student appliance adjusters in the water heater section of the laboratory of the San Diego, Calif., natural gas changeover school.

dirty and defective appliances; and accidental breakage during adjustment. Another difficulty will be the inability to get into some premises on the first and even subsequent calls on account of absence of the residents.

3. Speed and Cost of Operations: The rapidity with which the work can be done, and its total and even unit costs, depends upon a great number of variables such as severity of change of gas, selected method of operation, density of population and type of buildings and gas equipment in the area, and number of adjusters employed. A survey of a number of companies who have gone through changeover experiences where considerable adjustment was necessary indicates the following approximate data:

a. 100 adjusters can cover an area per day varying from one-quarter to one-half square mile.

b. 100 adjusters can service 1000 customers in a period varying from 8 to 20 hours and averaging 14 hours.

c. The cost to service 1000 customers varies from $2000 to $4500, with an average of $3440.

d. The cost to adjust an area of one square mile varies from $3725 to $8373, with an average of $5150.

IV. FOLLOW-UP ON INITIAL ADJUSTMENT

1. Types of Customer Complaints: Regardless of how carefully and thoroughly the initial adjustment is made, there will be some subsequent complaints from customers that can be directly attributable to the changeover. Some of these complaints will be justified as arising from improper adjustment; some will be understandable because of the customer's unfamiliarity with the new gas; some will be unreasonable or even absurd. Examples of these complaints are as follows:

a. Leaks and odors.

b. Poor pilot adjustment and ignition.

c. Flames too high, too low, smoky.

d. No heat in gas.

e. High bills.

2. Number and Duration of Complaints: The number of complaints to be expected, and the period over which they will occur, will again depend on the severity of the change of gas and the manner in which the changeover was conducted. The largest number of complaints will, of course, be expected immediately following the actual change in gas, and the number will reduce in frequency and gradually return to normal. The previously mentioned survey indicates that, in the event of a changeover where considerable adjustment was necessary, complaints will be received from approximately 25% of the customers during the first two weeks immediately following, and will drop off rapidly and return to normal in not longer than one year's time.

It will therefore be necessary to retain some portion of the special adjustment crew for at least several weeks to take care of the initial volume of follow-up complaints.

(This is the second of a series of articles by Mr. Corfield on the subject of changeover from manufactured to natural gas. The third article in this series will appear in the July issue of GAS.)

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Summer Air Conditioning

4. Operating Data on Equipment Produced by the Surface Combustion Corporation

By F. M. JOHNSON

Sales Manager, in Charge of Air Conditioning Division, Surface Combustion Corp., Toledo, Ohio

FROM a prominent eastern hospital we have the story of a unique air conditioning application in that all bedrooms, operating room, solarium, and corridors are cooled, dehumidified, and ventilated in summer and heated, humidified, and ventilated in winter.

Of special significance is that this has been done not only for the comfort of the patients, but also for medical observation of the effects of air conditioning on certain diseases, such as asthma, hay fever, arthritis, and other rheumatic ailments. It has been established that conditions of patients suffering from such ailments have been improved by living in climates where low relative humidity prevails. The main function of this air conditioning system installation, therefore, is to produce continuous relative humidity conditions as are obtained only intermittently in proper localities.

Specific Installations

In hospitals, general recirculation of the air is not to be allowed. Although a certain amount of recirculated air is not objectionable except where contagious diseases are handled, it was felt that the psychological effect of recirculated air on the patients should be considered. All hospital odors were entirely eliminated.

In this particular application, the air conditioning system was called upon to provide special functions not common to the usual comfort conditioning installation. In addition to an accurate control of both temperature and humidity, the lithium chloride solution used as a moisture absorption medium also served in absorbing from the air such foreign elements as soluble gases, smoke, odors, bacteria, and other objectionable impurities.

The above application is a typical difficult problem which is being handled by the Kathabar system. In the effort to solve these difficult problems, the Kathabar system has built up a reputation for raising the standard of air conditioning in general. Since the Kathabar system does provide separate control over humidity and sensible heat as indicated by temperature, the Kathabar system is supplying a demand by exacting problems in both the comfort and industrial processing field for air conditioning with uniform, accurate results.

In the industrial field, for instance, foundrymen have been confronted with the problem of varying atmospheric conditions, especially the effect of excess humidity on metals in cupola operation. Such conditions affect the silicon content of the metal and reflect in the quality of the castings. Today, air conditioning by means of the Kathabar system is being called upon to correct this problem and has shown definite results in providing for uniformity of products, fuel savings, quicker melts, all of which speed up production and open the way to operating possibilities.

Another typical, exacting air conditioning problem comes from the manufacture of tiny gelatin capsules. This particular product is formed and filled by automatic equipment of the most intricate design. Absolute temperature and humidity conditions must be maintained if production is to continue without interruption from varying weather conditions. Likewise, the storage of the capsules requires special atmospheric conditions different from the manufacturing conditions. There is also the question of comfort in the offices of this particular plant where the conditions are still different from the manufacturing and storage requirements. Here are three separate and distinct applications, all under the same roof now being served by one Kathabar air conditioning system (see Fig. 2).

The above three typical applications have been selected merely to indicate necessity of flexibility and simplicity and accuracy of application of air conditioning equipment to meet the requirements of modern needs. In fact, the function of the system must not stop with temperature conditions, but must provide facilities for humidifying, dehumidifying, circulation, cleaning, washing, deodorizing, and purifying. The above mentioned air conditioning problems as well as a large number of other difficult air conditioning jobs are being satisfactorily served by Kathabar system.

Principle of Operation

The Kathabar system operates on an entirely different basic principle from other commercial air conditioning systems in that it uses a chemical known as lithium chloride, a non-explosive and non-inflammable liquid, to regulate the moisture in the air independently of the temperature. However, it meets all the requirements listed in the above paragraph in that it removes odors, washes, circulates, heats or cools the air, and in general can be used in any of the specified functions of air conditioning either for physical comfort or for industrial processing.

The outside air comes in contact with the Kathene liquid, lithium chloride,

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F. M. JOHNSON

THIS ARTICLE by Mr. Johnson is the fourth in a series on gas-fired summer air conditioning, its equipment and potential market.

Mr. Johnson graduated from Michigan State College in 1923, joining the Chapman-Stein Furnace Co., Mount Vernon, Ohio. By 1930 when the Chapman-Stein Co. was purchased by the Surface Combustion Corp., Mr. Johnson had become sales manager. He is at the present time serving on the Air Conditioning Committee of the American Gas Association.

The first article in this series was published in the February issue of GAS, and was authored by H. W. Heisterkamp, manager air conditioning and sales, The Bryant Heater Co. of Cleveland, Ohio. The second article, published in the April issue, was contributed by G. F. Zellhoefer of the Williams Oil-O-Matic Heating Corp., Bloomington, Ill. The third article appeared in the May issue and was written by G. L. Simpson, vice president and general manager, Pittsburgh Lectrodryer Corp., Pittsburgh, Pa. The series will be continued in the July issue.—Editor.

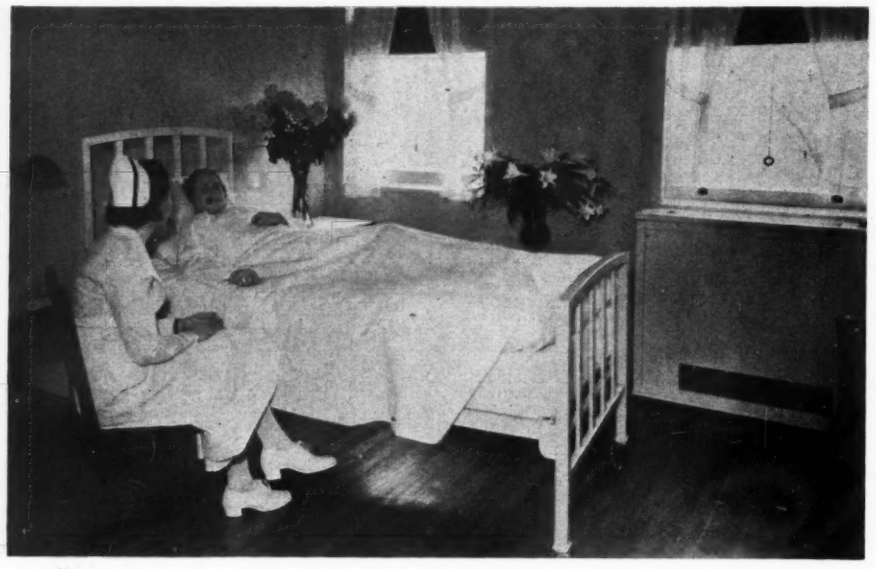

FIG. 1. A hospital room completely air conditioned by the Kathabar system. Hospital rooms can be held at 30% relative humidity throughout the year and, due to the low operating cost of the Kathabar equipment, a high percentage of fresh air can be used. The recirculating window unit shown in the photograph is used for mixing the recirculated air in the room with fresh air from the Kathabar unit with no recirculated air passing from one room to the other.

by means of a Kathabar contactor. Humidification or dehumidification is in direct proportion to the temperature of the Kathene, the temperature which is automatically controlled to add to or absorb the humidity as required. This method of control is extremely accurate and very simple in operation. Fig. 1 shows the Kathabar summer cycle. The humidity conditioned air passes from the Kathabar contactor or cooling element for temperature conditions, then the complete conditioned air enters the comfort area or processing application as the perfect atmosphere. At the same time the air comes in contact with the Kathene liquid, the washing, deodorizing, and purifying take place.

Kathabar Equipment

A complete Kathabar system consists of one or a series of contactors or cells as shown in Fig. 4 (on following page), depending upon the capacity of air required for treatment. The cells are made in two standard sizes. The No. 31 cell is rated at 3000 c.f.m. of standard air and the No. 41 at 4000 c.f.m. The air passes through these contactor cells, where this air comes in direct contact with the lithium chloride and where either dehumidification or humidification takes place to the degree required. Fig. 5 shows the Kathabar regenerator, where the heat is applied to raise the Kathene solution to a sufficiently high temperature where the moisture can be readily transferred through a small amount of air and carried out as waste saturated air. This unit contains the circulating pump and sump for storage of the Kathene solution. Electrical consumption for a 10,000 c.f.m. job would run approximately 1.9 BHP for the waste air fan and 4.5 BHP for the solution pump.

The automatic feeding valve on the Kathene heater and the automatic water valve on the Kathene cooler provide the only control necessary for the operation of the system. This control is simple and accurate, eliminating any necessity of field engineering supervision.

The Kathabar system operates in conjunction with conventional cooling equipment or well water for summer operation. In the wintertime the equipment is used to add moisture to the air and can be used in connection with the conventional heating system for the winter season. All Kathabar units are either using gas for fuel or are potential gas units through the medium of furnishing heat for regenerating purposes. The load on the Kathene heater will be three cu. ft. of natural gas per pound of moisture extracted from the air. For instance, if 10,000 c.f.m. of air were treated by means of the Kathene unit and that air were entering the unit at 95° dry bulb, 80° wet bulb, 132 grains per lb. and the leaving conditions were 85° dry bulb, 57° wet bulb, 24 grains per lb., the total moisture removed would be 692 lbs. per hour, and this procedure would require approximately 2000 cu. ft. of natural gas per hour.

Kathabar equipment requires a minimum amount of space for installation due largely to the use of a number of

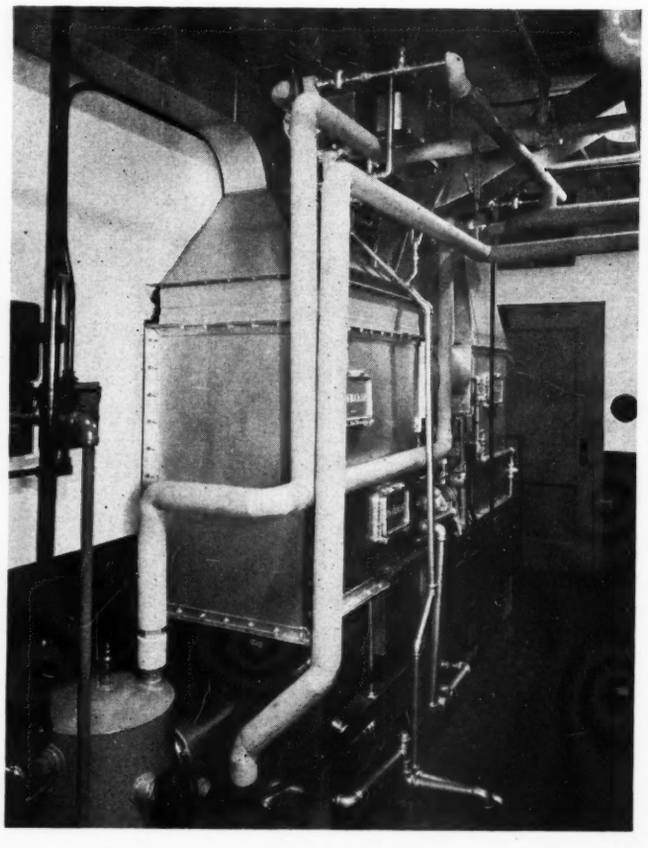

FIG. 2

Some Kathabar installations are solving extremely difficult problems in industrial fields. The installation shown has been satisfactorily solving the following problems for a number of years. This equipment must be able to maintain in a room conditions of 76° temperature and 10% relative humidity, or 76° temperature saturated, or any condition between 76° temperature and 10% and 76° saturated, and be able to change from one condition to the other extreme within an hour's time.

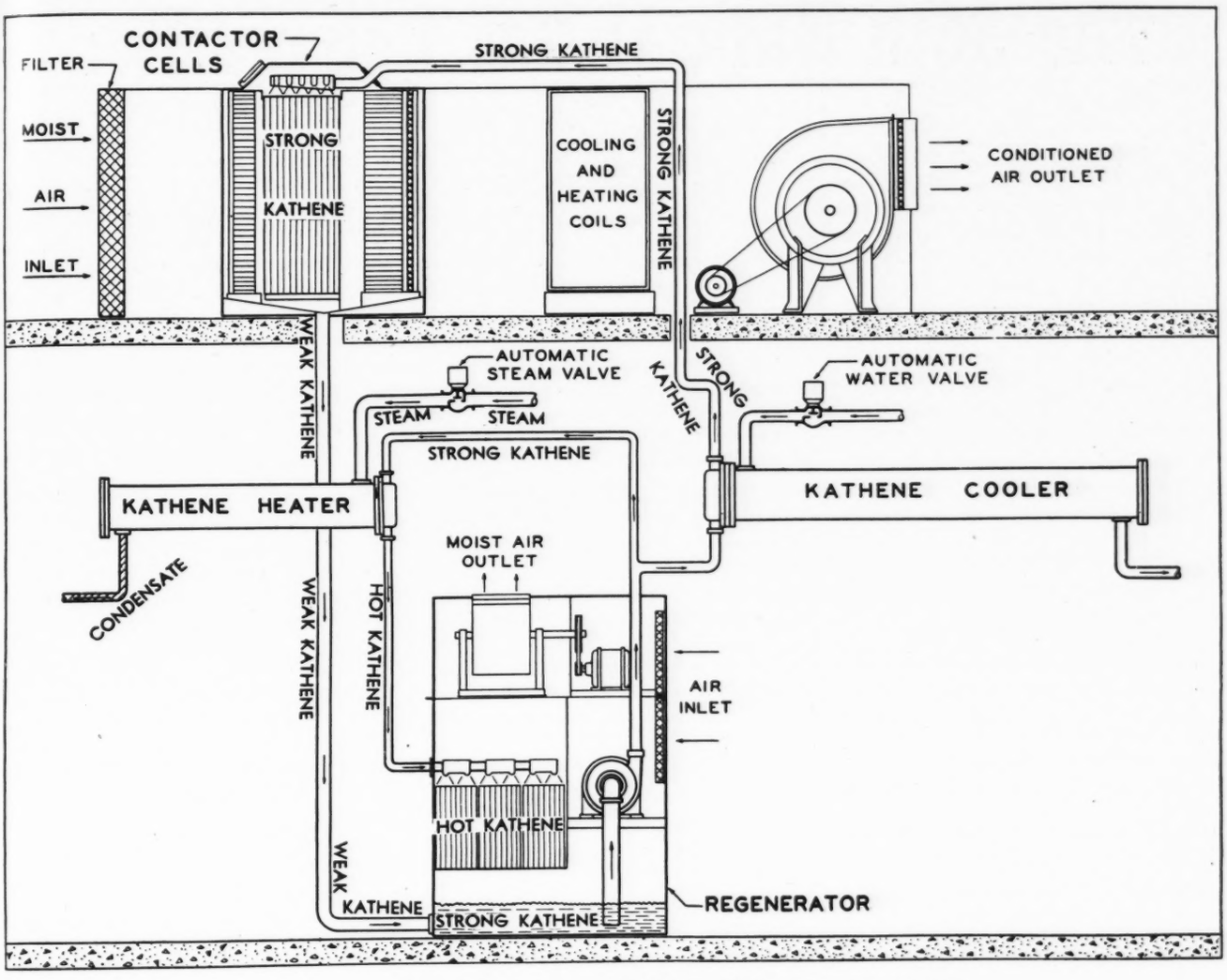

FIG. 3. Diagram of a typical Kathabar cycle for summer operation.

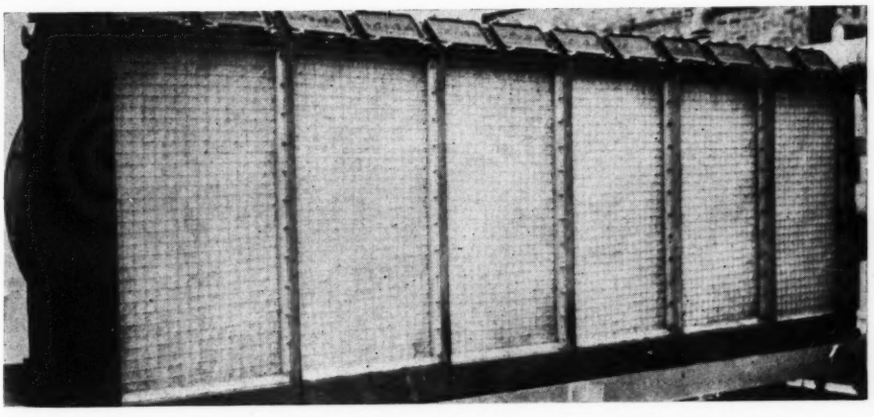

FIG. 4. A Kathabar system consists of one or a series of contactors or cells.

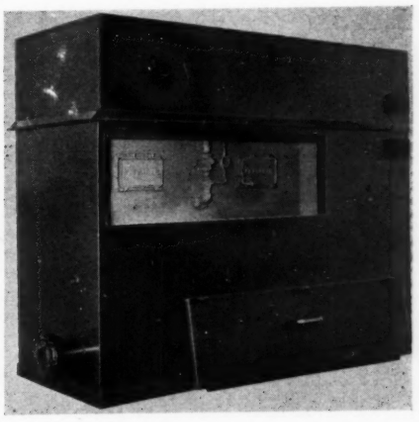

FIG. 5. A Kathabar regenerator.

duplicate parts. For instance, the cells can be arranged in some of the most out-of-the-way places, while the regenerator may be located some distance away in a separate room or on a separate floor. Where the regenerator is located some distance away from the rest of the system, the contactors and the regenerator can be installed with the only connection being the small liquid conveying pipes. Maintenance and operating costs are minimized, as the only mechanical or moving part is the motor on the recirculating pump in the regenerator, and the waste air fan carrying away the moist air from the regenerator. The fans for moving the air through the contactor and the regenerator are of conventional design and common with practically all types of air conditioning systems.

The 36th Natural Gas Convention

By CRAIG ESPY

NATIONAL Defense and Natural Gas —these two concepts for the past 21 months of the limited National emergency linked in close and cooperative appliance formed the keynote which prevailed throughout the many sessions of the 36th Annual Natural Gas Convention held by the Natural Gas Section of the American Gas Association in Dallas, Texas, May 5-8, 1941. It was during those months of the limited National Emergency that the forces of the Natural Gas Industry have been mobilized and geared to meet any situation which might arise as a result of President Roosevelt's world shaking address of Tuesday, May 27, and his proclamation that the United States faces an Unlimited Emergency.

Assurance that the Natural Gas Industry can play any role that it may be called upon to portray is found in the words of W. B. Head, assistant to the vice president and general manager of the United Gas Corp. of Houston, Texas:

"America has a tremendous edge on the rest of the world with regard to one of the greatest essentials of war and defense—energy—energy in the form of natural gas. In all of Central Europe there is no such mighty pool of latent power—ready-made in the heart of the earth—such as we have here in America. In our hands, under the control and management of our industry, is one of the greatest industrial advantages for defense and for aid to England."

The new officers nominated (to be elected at the A. G. A. Convention this Fall) are for Chairman, J. French Robinson, President, The East Ohio Gas Co., Cleveland Ohio; for vice-chairman, Bert R. Bay, president, Northern Natural Gas Co., Omaha, Nebraska. Mr. Hancock automatically becomes chairman of the Advisory Committee.

The CP seal acknowledged to be the gas industry's sales promotional spearhead, formed an exciting and interesting phase of the Convention.

John E. Bogan, sales promotion director in charge of this industry activity, and Alton B. Parker, national CP sales counselor, gave convention delegates an opportunity to view PC Gas Range activity through the eyes of the legendary glamor of the Old West. Guests at the convention were reminded of CP on every hand, from the "yippees" that echoed from a 15-ft. branding corral in the lobby of the Hotel Adolphus (convention headquarters) to the harmonious strains of the roving CP Ranger Band. It was to the corral that convention guests stampeded to receive genuine Texas cowhide convention souvenirs, branded with the CP seal before their very eyes by old time cowboys.

Beautiful lariat looping CP cow girls enhanced the corral. Full size top grain Texas steerhides, suspended across the lobbies of the Adolphus and Baker Hotels, bore the message, "Natural Gas Convention, Dallas, 1941 —For Everyone in '41 It's CP." These steerhides were bathed in ever-changing varicolored lights, and drew much attention.

GENERAL SESSIONS

On May 5 in the Grand Ballroom of the Hotel Adolphus, the 1040 registered delegates gathered for the convention's opening general session, presided over by Natural Gas Section Chairman H. D. Hancock, president, Gas Advisers, Inc., New York City. Four speakers addressed this session, the first being D. A. Hulcy, president, Lone Star Gas Co., who, as chairman of the convention, welcomed the delegates to Dallas. Said Mr. Hulcy:

"Our industry occupies a very important place in the National Defense Program, and I know we are unified in the assumption of this responsibility at our number one job. I have the very definite feeling that the future of the privately owned utilities, to a marked degree will depend on how well we do our jobs in connection with the National Defense Program at this time."

Chairman Hancock then revealed that Uncle Sam's soldiers are becoming better soldiers quicker because of natural gas—"By taking off the Army's shoulders the necessity to chop wood, lug ashes, heave coal and do a great many other time-consuming chores," he said, "natural gas is giving our soldiers more time to train for the main business of becoming soldiers."

The opening session was then addressed by Thomas J. Strickler, president of the American Gas Association, who said: "We want the public to know that we are nice folks to do business with, that we are a credit to the community and an asset, and that we are experts at our jobs. There is much to gain by conveying this knowledge to the various communities we serve. And if my personal observation is worth anything, I believe the time was never more appropriate to do it than right now."

John Temple Graves III, editor of the Birmingham *Age Herald*, was the fourth speaker of this first session.

The second general session, which met on Wednesday morning, was presided over by J. French Robinson, vice chairman of the Natural Gas Section, and featured addresses by Alexander Forward, managing director of the A. G. A.; R. R. Sayers, director of the U. S. Bureau of Mines, Washington, D. C., and W. E. Derwent, president, Association of Gas Appliance and Equipment Manufacturers. Said Mr. Derwent:

"Gas appliance sales will mount to 180 millions of dollars in 1941 if there is no curtailment of the program. Five divisions of the appliance group—ranges, water heaters, refrigerators, house heating and space heating—sold 165 million last year."

TRANSMISSION CONFERENCE

During the convention, those delegates interested in the problems of natural gas transmission met three times, each meeting being presided over by Julian L. Foster, chairman of the Transmission Committee and general superintendent of the Lone Star Gas Co.

The first meeting on Tuesday morning presented six speakers, the subjects in the main being confined to topics covering pipe line flow. J. William Ferguson, Canadian River Gas Co., discussed internal cleaning, dust cleaning, dehydration, and increased capacity. A paper on pipe line flow calculations was offered by P. McDonald Biddison, while a study describing a pipe line flow calculator was presented by C. F. de Mey, of Ohio Fuel Gas Co. C. Lambert Moore, of El Paso Natural Gas Co., discussed the effect of compressibility factor on horsepower requirements in high compression. Weather prophecy was the topic of B. M. Laulhere, Southern California Gas Co.

Leading off in a panel discussion on modern compressor station design suction and discharge piping, Mr. Laulhere read a paper prepared by C. S. Kenworthy, Natural Gas Pipeline Co. of America, in which he gave information obtained from tests at several stations of his company dealing with pressure surges in inter-connecting piping, showing the manner in which the operation of the compressor and engine are affected—what conditions will cause a serious surge and what steps will be taken to eliminate it.

C. H. Moore discussed various methods used by Lone Star Gas Co. in jacket water cooling and treating. His company has had most success in closed water systems in which evaporation of jacket water can be held to the minimum.

Mufflers were discussed by H. P. George, Southern California Gas Co.

C. C. Phillips, The Ohio Fuel Gas Co., read a paper prepared by T. H. Kerr giving a summary of internal dust problems.

Lubrication was the topic of B. L. Rogers, Lone Star Gas Co., while the last speaker in the panel discussion was Paul F. Marks, Northern Natural Gas Co., who, in speaking on electric system to prevent electrolysis, pointed out that although the problem of electrolysis is a serious one, the remedy is so simple and inexpensive that it seems folly to neglect taking necessary measures in order to insure pipe against further corrosion.

Two other speakers completed the first transmission meeting: J. T. Innis, Northern Natural Gas Co., discussed 24-in. solid welded pipe lines, and W. J. Garner, Lone Star Gas Co., who, in covering the subject of metalizing, predicted that the defense program and the scarcity of metal will extend the use of this process.

Feature of the third transmission meeting was a paper by John A. Clark, Hope Natural Gas Co., who gave a progress report on the first winter's operation of the liquefaction and regasification plant of Cleveland, Ohio (see page 00).

W. M. Deaton and E. M. Frost, of the U. S. Bureau of Mines, then took up the subject of water content of compressed gases.

Eric R. Seabloom told of the series of tests his company has conducted on unreinforced and reinforced headers in helping to formulate the A. S. A. code covering pressure piping.

INDUSTRIAL SESSIONS

Perhaps the most apt summary of the Industrial and Commercial Sales sessions was given by H. Carl Wolf, chairman of the A. G. A. Industrial and Commercial Gas Section and president of the Atlanta Gas Light Co., who presided over the meeting. In his wind-up talk, "From Here—and How?," Mr. Wolf observed: "Never before have I participated in a program of wider scope. No one can have taken part in this meeting without realizing the ever-broadening horizon, the expanding possibilities, and the mounting enthusiasm characteristic of the industrial gas business today. In the past two afternoons we have discussed everything from chicken brooders to open hearth furnaces—and the only thing left to say now is, go home and work like hell—goodbye!"

First speaker was Manley H. Clark, Southern Counties Gas Co., and chairman of the A. G. A. Gas Engine Power Committee (see page 00).

Reporting upon progress in connection with the development of an A.G.A. Boiler Installation Code, L. S. Reagan, Webster Engineering Co., Tulsa, indicated that the code had been widely distributed for criticism, that all criticisms had been reviewed by the committee, and that the Code would go into effect shortly.

John K. Knighton, Servel, Inc., startled many with the bald statement, "At last, gas residential air conditioning is now a reality"; and he demonstrated the point in "markets" and in "sales potentials" for the new year-round absorption type of unit.

In interpreting "What Automatic Controls on Your Installations Mean to Your Customers and to You," A. C. Grant, Minneapolis-Honeywell Regulator Co., noted that although the occasional boiler or oven accident receives much publicity, many times more accidents are prevented by the unsung operation of wisely selected and properly adapted safety controls.

To start off the afternoon meeting with a symposium of business-getting ideas concerning "Miscellaneous Gas Uses," Jack Torbert, Wyandotte County Gas Co., described an ingenious adaptation of gas-fired hot water circulated through copper coils used to incubate eggs and brood chicks in the Kansas City area. J. W. Duvall, Consolidated Gas Utilities Corp., cited the reconditioning of a reel bake oven by removing the perforated refractory arch and installing blue flame refractory-heated burners. With regard to commercial cooking, A. B. Banowsky, United Gas Corp., maintained that it is still possible in natural gas areas to reanalyze the true needs of hotels and restaurants, and recommend changes for quicker and better service—with resultant increases in gas load.

The closing phase of the meeting in-

The cast of the "Cavalcade of Gas," a dramatic presentation before the Residential Sales Meeting.

GEO. H. McFADDEN
Ohio Foundry & Mfg. Co.
J. B. GRAHAM
National Tube Co.
A. I. WALLACE
American Radiator & Standard Sanitary Corp.
N. K. McFARLAND
Oklahoma Contracting Co.
ALEXANDER FORWARD
A. G. A.
C. W. SEARS
Pasadena, Calif.
M. W. WALSH
Louisville, Ky.
DON T. ALLEN
A. O. Smith Corp.
THE NATURAL
1941 Convention
L. C. GINN
American Stove Co.
F. T. PARKS
Public Service Co. of Colorado
R. T. WELLS
Cities Service Gas Co.
H. L. PINKERTON
Albuquerque Gas & Electric Co.
H. P. GEORGE
Southern California Gas Co.
VAN THOMPSON
Southern Union Gas
F. T. PARKS
Public Service Co. of Colorado
R. W. STAFFORD
Connelly Iron Sponge Co.
GEORGE B. McCOMB
The Barrett Co.
F. W. LAVERTY
Clark Bros., Inc.
FRED H. HAYES
Clark Bros., Inc.
K. HUTCHCRAFT
Clark Bros.
M. H. ROTHS
The Fluor Corp.
W. R. DAVIS
Southern California Gas Co.
B. M. LAULHERE
Southern California Gas Co.
PAUL J. DORSEY
Cribben & Sexton Co.
C. C. YOUNG
The Gas Service Co.
WINSLOW V. FITCH
Utility Fan Corp.
LUCIAN L. KAHN
The Estate Stove Co.
JOHN E. BOGAN
A. G. A. E. M.
K. E. SHARP
Cimarron Utilities Co.
FAY C. WALTERS
Panhandle Eastern Pipe Line Co.
W. L. THACKREY
Colorado-Wyoming Gas Co.
R. M. WAINWRIGHT
Montana-Dakota Utilities Co.
B. R. BAY
Northern Natural Gas Co.
J. C. REINBOLD
Panhandle Eastern Pipe Line Co.
R. A. RANSOM
Panhandle Eastern Pipe Line Co.
L. L. BAXTER
Arkansas Western Gas Co.
MISS H. B. MOOMAW
A. G. A.

GAS SECTION

on in Dallas

volved a series of five papers by experts in various classes of "Natural Gas Utilization in Larger Heating Operations." Concerning, respectively, the heating requirements of the ceramic industry, the metal industries, oil refineries, power plants, and railroad shops were papers by Messrs. D. D. Beach, Macon Gas Co.; George M. Parker, Mississippi River Fuel Corp.; Frank S. Kelly, Jr., Arkansas Louisiana Gas Co.; George V. Rowland, Cities Service Gas Co.; and D. W. Reeves, Oklahoma Natural Gas Co.

PRODUCTION CONFERENCE

E. L. Rawlins, of the Union Producing Co., Shreveport, La., presided over the two production meetings, the first of which featured a symposium on shooting and acidizing wells. Contributors to this symposium were J. M. Hanley, Northern Natural Gas Co.; T. W. Johnson, Union Producing Co.; J. J. Schmidt, The East Ohio Gas Co.; Coleman Hunter, Kentucky-West Virginia Gas Co. Speakers at the Production Conference were: Valentine Mertz, Natural Gas Fellowship student at the University of Oklahoma; Henry C. Walton, Republic Natural Gas Co.; J. G. Dickinson, Texoma Natural Gas Co.; W. E. Huddleston, Cities Service Gas Co.

RESIDENTIAL CONFERENCE

Two meetings of the Residential Gas Sales Conference were held under the direction of Chairman F. M. Rosenkrans, new business manager of the Gas Service Co., Kansas City, Mo., who summarizes the activities of his committee in the following statement:

"The natural gas industry has enjoyed a phenomenal growth during the past decade, particularly in view of the recession and stagnation that affected business generally. It is a function of the Residential Natural Gas Sales Committee to bring to the natural gas industry all helpful aids and suggestions for the development of its residential business and in meeting the problems pertaining thereto, that have resulted from the work of the various committees of the Residential Gas Sales Section of the American Gas Association. The presentation and discussion of progress and problems in developing the residential phases of the natural gas business is one of the features of the annual convention of the Natural Gas Department of the American Gas Association.

"At the convention the program of the Residential Natural Gas Sales Section was divided into two sessions. The first session dealt with executive responsibility in organization and domestic sales promotion methods as applied to, first, metropolitan companies and, second, to companies having urban service areas. In this program the executive responsibility and organization to secure the most effective result were discussed by outstanding executives in the natural gas industry.

"The 'Cavalcade of Gas' was presented at the second session of the Residential Natural Gas Sales Section. This was a unified and colorful series of skits portraying gas for the four big jobs. Through this portrayal the committee endeavored to bring to the convention the story of progress in the appliance equipment field, as well as successful methods of promoting and meeting the problems in the domestic phase of the natural gas business."

Contributors to the Executive Responsibility symposium on the first day were J. French Robinson, Natural Gas Section vice chairman, and E. J. Stern, vice president, Public Utilities Corp., Atlanta, Ga. The sound movie, "Fun in the Kitchen," rounded out the first meeting.

The Cavalcade of Gas feature of the second Residential Sales meeting presented the following participants: Lloyd C. Ginn, American Stove Co.; J. G. Tooker, The Gas Service Co.; J. H. Warden, Oklahoma Natural Gas Co.; E. P. Fleischi, Central Illinois Light Co.; Jewel Hensley, The Gas Service Co.; and Adelle Morgenson, The Gas Service Co.

ACCIDENT PREVENTION

The Accident Prevention sessions, which were held under Chairman W. H. Adams, The Manufacturers Light and Heat Co., presented a panel discussion, "How to Instill and Maintain a Greater Interest in Accident Prevention" which brought participation from James R. D. Eddy, Department of Vocational Education, Austin, Texas; C. E. Bennett, The Manufacturers Light & Heat Co.; Ralph Shipp, The Lone Star Gas Co.; Floyd Callison, Oklahoma Natural Gas Co.; and Hon. J. P. Gibbs, Casualty Insurance Commissioner.

Much interest was shown in the three papers which completed the Accident Prevention session. The first of these dealt with the prevention and extinguishing of fires and explosions in the gas industry, and was presented by G. M. Kintz, U. S. Bureau of Mines. W. R. Davis, Southern California Gas Co., in discussing "The Right Man in the Right Place" related how his company checks to find correct placement of personnel through psychological tests.

"Care in selecting personnel is the most effective way of protecting utility property against sabotage," was the statement of E. C. Wenig, No. 1 man in the Dallas F. B. I. office, who addressed the Accidental Prevention sessions.

ACCOUNTING CONFERENCE

Accounting conferences, under Chairman R. E. Hull, United Gas Pipe Line Co., and Vice Chairman L. L. Dyer, Lone Star Gas Co., were held on Tuesday and brought as speakers E. H. Keller, Philadelphia Electric Co.; E. A. Steinberger, Lone Star Gas Co.; I. M. Avent, United Gas Pipe Line Co.

LUNCHEON MEETINGS

Not a small portion of the business of this convention was transacted around the luncheon table. Three of these luncheon meetings were scheduled for the second day of the meeting: (1) The Accounting Committee; (2) The Home Service and Residential Sales Delegates; and (3) The Main Technical and Research Committees. The luncheon meeting on Wednesday was devoted to discussions of industrial and commercial gas sales problems.

Much interest was shown in the air conditioning exhibit setup on the mezzanine floor of the Baker Hotel in Dallas. Attractive displays were presented by leading manufacturers of air conditioning equipment.

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Indiana Gas Association

GAS Staff Report by Craig Espy: Approximately 7000 gas ranges were purchased last year by customers of Indiana Gas Companies as revealed in the address of E. C. Weston, president of Indiana Gas Association at the 31st Annual conference of the Association held at French Lick Springs, Ind., May 12 and 13. The address was read by F. B. Cully, vice president, who presided over the convention in the absence of Mr. Weston. The paper further revealed that revenue of gas companies within the state increased during the year nearly $2,000,000 over the revenue the year before.

F. B. Cully was elected new president by the 200 delegates attending the meeting and C. V. Sorenson was elected vice president. H. W. Thornburg was re-elected secretary-treasurer and E. E. Linburg and R. S. Bruner were elected new directors. C. W. Goris was re-elected to the directorate.

In speaking on "The Effects of War on the Gas Industry," Davis M. DeBard, Stone & Webster Service Corp., pointed out that competition for the consumer's dollar will be keener and that the gas industry, "better to serve and better to prosper, must continually be on the lookout not only to improve the efficiency of present gas equipment but also to broaden its scope to existing markets." To do this, he said, more gas promotion is necessary. Other speakers on the general sessions program were Beulah Strawway, WLW, Cincinnati; E. D. Anderson, Northern Indiana Public Service Co. who told what his company is doing in holding

GAS Camera

Visits the A.G.A.E.M. Convention In Los Angeles

Conventionites at the Indiana Gas Association meeting.

Employee Information Programs; Dr. J. L. Bray, Purdue University; and Ray C. Ellis, Delco Radio Divlision, General Motors.

The two meetings of the Technical Section were presided over by Chairman H. G. Horstman and Vice Chairman J. M. Pickford, the latter also bringing the report of the committee on Appliance Servicing.

L. Kirch, as chairman of the committee on Coordination of Operating Facilities brought the report of his group and D. S. Martin, chairman, of the Unaccounted-for Gas Committee reported on the work of this group. The liquid storage of gas was discussed by W. Steinwedell, Gas Machinery Co., and John Diehl, American Meter Co., spoke on "Trends in Metering Large Volumes of Gas." J. M. Krappe, Purdue, showed how improved construction helps to eliminate window condensation in small houses, and J. Hendrickson spoke on "Water Heaters, Designing for Efficiency, Easy Service and Safety."

Speaking before the second Technical conference, A. D. MacLean, Pittsburgh Equitable Meter Co. discussed the theory of pressure regulation from the standpoint of actual equipment. J. Rian, Northern Indiana Public Service Co. pointed out that heating jobs must be designed, installed and maintained as trouble free as possible as a protective measure against competitive fuels and as a means of promoting other uses of gas fuel in the home. W. J. Tragesser and W. K. Paul assisted in the preparation of this report. C. A. Peterson, Citizens Gas & Coke Utility discussed, "Handling and Servicing Dealer Equipment from the standpoint of All-Out Aid" and the Dealer Service Aid Policy. By the first plan the gas company connects appliances gratuitously and renders free service. By the second plan a sales contact man is appointed to help dealers sell. E. J. Bower participated in this report.

Others appearing on this program were R. V. McGuire, Public Service Co. of Indiana, who told the experience of his company in detecting gas leaks with the gas stethescope, F. J. Bengert, Southern Indiana Gas & Electric Co., J. M. McCaleb, Citizens Gas & Coke Utility, E. Charleston, Northern Indiana Public Service Co., and F. A. Schaefer, Public Service Co. of Indiana.

In the Sales Section meetings presided over by James Sackman, Jim Donnelly, Bastian Morley Co., pointed out that Gas Industry's long pull opportunity lies in helping the gas appliance manufacturers secure proper sales outlets. Additional distribution outlets to consumers, he said, will help to give the industry the national advertising and promotion it seeks. L. C. Ginn, American Stove Co., in "Paying Tribute to the Great American Salesman" pointed out that on the ability of the salesmen of the industry rests the success of the industry. R. J. Caniff, Servel Inc. deal with "Trends in the Refrigeration Market" and with a review of gas refrigeration. Forty million domestic gas refrigeration units will be added by the gas industry this year, he estimated.

A. E. Hatley, Central Indiana Gas Co., asked the members to develop latent possibilities in employees through proper training and A. B. Parker, A.G.A.E.M. reviewed the accomplishments of the CP Range program. He urged that gas ranges be sold "up to quality" and "not down to price." He condemned the "CP Except" form of selling practiced by some salesmen by which they tell the prospect that "this range is CP except for certain features." H. A. Millbern, J. D. Alford, Waldo Schram, D. O. Krutzman, F. W. Budd and E. G. Peabody appeared in a "Sales Training Symposium" telling what their companies are doing in sales training.

The Accounting Section was presided over by Paul Stark. C. E. Packman, Middlewest Service Co. presented a paper on "Historical Cost of Property and Plant."

D. H. Mitchell presided over the Annual Banquet with Colonel Alvin M. Owsley, authority on national and international affairs, being speaker of the evening. A golf tournament was held the first afternoon of the conference. J. M. Phillips, Dick North and Frank Ingle had charge of this affair. Mrs. E. G. Peabody was chairman of the Ladies' Bridge Tournament. The general program committee was made up of F. W. Budd, T. L. Kemp, J. M. Pickford and Paul Stark. T. S. Smith had charge of Registration and G. A. Saas of special entertainment.

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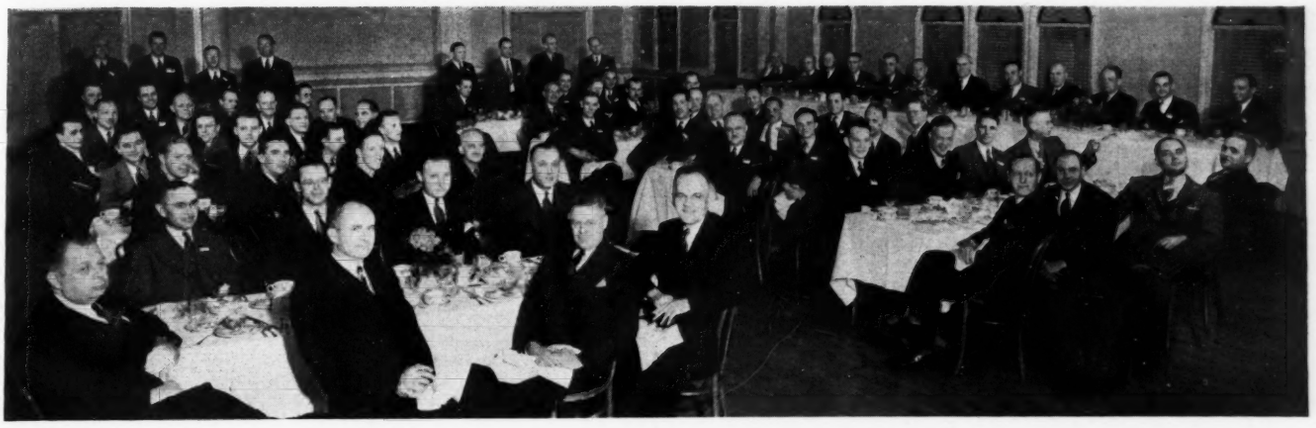
Production Conference

GAS Staff Report by Elliott Taylor: With a total registration of 329, and attendance at many of the sessions greatly in excess of this number, the annual Joint Conference of of the Production and Chemical Committees of the Technical Section, American Gas Association, held a series of the biggest meetings in its history at the Pennsylvania Hotel, New York City, May 19 to 21.

Inevitably national defense and the Gas Industry's preparation for the eventualities of war monopolized the dramatic spot in many of the sessions. A luncheon forum on national defense drew an attendance of 120 on the closing day. The luncheon was under the chairmanship of D. P. Hartson, chairman of the Technical Section, and in the program were six four-minute speakers who touched briefly but in most instances specifically, on the problems that are expected to arise in the event of war, with suggestions for meeting them.

Among the experts on various phases of industry defense, were: V. J. Altieri, Eastern Gas and Fuel Associates, Everett, Mass.; Samuel Green, The Brooklyn Union Gas Co., Brooklyn, N. Y.; F. B. Cadmus, Consolidated Edison Co. of N. Y., Inc., New York City; V. A. Ogilvie, Gas Advisers Inc., New York City; C. S. Goldsmith, The Brooklyn Union Gas Co., Brooklyn, N. Y.; and Prof. E. S. Pettyjohn, University of Michigan, Ann Arbor, Mich.

Prof. Pettijohn has had experience as member of the Michigan organization set up to administer the selective service draft, and



At the banquet held at the Midwest Industrial Sales Council on May 8 in the ballroom of the Fort Armstrong Hotel, Rock Island, Illinois.

his talk was one of suggestions on the responsibility of utility executives to seek deferment for key or indispensible men who are called up for selective service classification. The spirit of the draft, according to the speaker, is intended to be one of selecting only men for the army who can be released from their civilian duties without working a hardship on the industries employing them. Yet only the employer can verify his employees' claims to indispensability. For the employer to fail to do so, under a misguided impression of patriotism endangers the proper functioning of the selective effort.

Round table luncheon conferences on the first day of the conference numbered three, devoted to: Coal Carbonization and By-Products, under hte chairmanship of W. T. Brown, Jones and Laughlin Steel Co., Pittsburgh, Pa.; Water Gas Operation, S. Green, chairman, The Brooklyn Union Gas Co., Brooklyn N. Y.; and Chemistry in The Gas Industry, with Dr. C. W. Wilson of Consolidated Gas Electric Light and Power Co., Baltimore, Md., in the chair.

Open forum discussions followed each luncheon in the round table series, as well as the final one devoted to national defense.

Midwest Industrial Council

More than 70 industrial gas engineers from eight midwestern states and Canada arrived in Rock Island, Ill., on May 8 for a two-day meeting of the Midwest Industrial Gas Sales Council of the Industrial and Commercial Gas Section, American Gas Association. George A. Uhlmeyer, Industrial Gas Engineer of the Peoples Power Co. and host, opened the meeting.

Speakers at the morning meeting were James J. Offutt, ceramic engineer; A. P. Green, Firebrick Co., Mexico, Missouri, who presented a paper, "Selecting Refractories for Gas-fired Industrial Furnaces"; R. J. Cowan, metallurgist, Surface Combustion Corp., Toledo, Ohio, who spoke on "Furnace Design and Utilization."

The afternoon meeting offered a paper, "Development of Straight Line Curves for Straight Forward Solution of Industrial Gas Burning Problems" by Slade B. Gamble, National Machine Works, Chicago, Ill. Following this the group viewed a movie, "Flame Hardening With Gas." This movie was supplemented with a talk by Jack A. Smith, Selas Co., Chicago, Ill.

The final talk of the day, delivered by Gordon Williams, metallurgist, Deere and Co., was "What the Gas Engineer Should Know About Metallurgy."

The banquet held at the Fort Armstrong hotel climaxed the day's meeting. George Uhlmeyer, toastmaster, with Robert Lind as co-host, introduced the following speakers: Brig. Gen. Norman S. Ramsey, Commandant of Rock Island Arsenal; R. B. McDonald, president and general manager of the Peoples Power Co. of Rock Island; Hyman Bornstein, chief metallurgist of Deere and Co., Moline; and James Allen, Chicago, manager of Engineering and Construction departments of the International Harvester Co.

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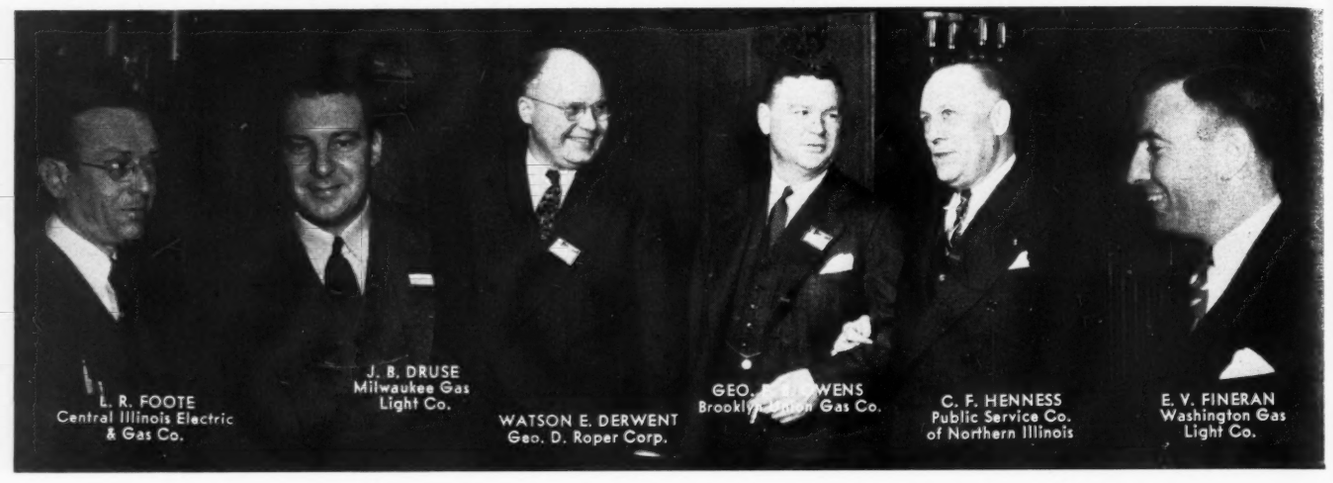
Hotel, Restaurant Meeting

Emphasis upon modern gas counter-appliance sales techniques, and upon trends in the quantity cookery baking and commercial heating fields which are affecting non-residential gas sales, characterized the 1941 A.G.A. Hotel, Restaurant and Commercial Sales Conference, held at the Palmer House, Chicago, April 24 and 25, and attended by about 150 executives, utility sales managers, industrial gas men, and appliance manufac-

Among those present at the A.G.A. Production and Chemical Conference were: FRONT ROW (seated): R. E. Kruger, chairman, Gas Conditioning Committee; Gladys Hanshaw, A.G.A. Headquarters; H. L. Gaidry, vice chairman, Technical Section; D. P. Hartson, chairman, Technical Section; John H. Wolfe, Consolidated Gas, Electric Light & Power Co. of Baltimore; E. L. Sweeney, chairman, Chemical Committee. FRONT ROW (standing): L. W. Tuttle, chairman, Distribution Committee; J. M. Beall, A.G.A. Headquarters, editor A.G.A. Monthly; W. Philpot, Consumers Gas Co.; Dr. A. R. Powell, Koppers Co.; S. P. Cobb, Ebasco Services; H. M. Blain, New Orleans, La.; R. J. Sheridan, vice chairman, Chemical Committee. BACK ROW (standing): H. D. Lehman, vice chairman, Gas Conditioning Committee; R. G. Griswold, president, Electric Advisers, Inc.; L. F. Knowlton, chairman, Gas Production Committee; S. J. Beale, chairman, Builders' Section; J. V. G. Postles, The Philadelphia Gas Works Co.; C. S. Goldsmith, vice chairman, Distribution Committee; W. J. Murdock, Western United Gas & Electric Co.; V. J. Altieri, chairman, Subcommittee on New Developments.



Among those present at A. G. A.'s Hotel, Restaurant, and Commercial Sales Conference

turers from 18 states. Three round table discussions were scheduled on the afternoon of the second day.

Another outstanding feature of the meeting was a display of 28 representative gas-fired counter cooking appliances of latest design, produced by 17 manufacturers.

George F. A. Owens, vice chairman of the A.G.A. Industrial and Commercial Gas Section, and assistant vice president of The Brooklyn Union Gas Co., opened the Thursday morning Sales and Utilization Session, observing that the hotel, restaurant and commercial load is so large, profitable and rich in possibilities for development, that no effort should be spared in doing the best possible job in this quarter.

First speaker was E. V. Fineran, manager, Industrial Sales Department, Washington (D. C.) Gas Light Co., who described the technique developed by his company in conducting annual Commercial Kitchen Modernization Campaigns. The Washington company's third annual effort in this direction resulted in $48,500 of new commercial cooking business directly traceable to the campaign.

After Watson E. Derwent, president, Association of Gas Appliance & Equipment Manufacturers, and vice president, Geo. D. Roper Corp., Rockford. Ill., had outlined the growing interest on the part of manufacturers in the possibilities of broader commercial business, J. B. Druse, manager, Commercial Gas Sales Division, Milwaukee Gas Light Co. analyzed "Business Opportunities In The Corner Bakery."

R. M. Conner, director of the A.G.A. Testing Laboratories, outlined progress in developing A.G.A. Approval Requirements for commercial gas-using equipment not covered by existing standards.

"Modern Food Service", according to Paul Moore, nationally noted restaurant executive of Chicago, should mean to the gas industry an opportunity to show its hotel and restaurant customers a way to profit. He recommended that every sales proposal be accompanied by a statement indicating the length of time required to write off the cost of new replacement equipment in food, fuel, time and other savings.

Most surprising data disclosed at the Conference was that presented by C. George Segeler, engineer of utilization, A.G.A., New York, on the subject of "Is There Excess Heat in Restaurants?—An Analysis of Recent Studies." After reviewing psychometric tests concurrently made in 18 sets of comparable gas and electric kitchens of various types in various parts of the country, it was surprisingly demonstrated that the gas kitchen may actually be cooler and dryer than the equivalent electric kitchen. This is in direct contradiction to existing belief and advertising claims, and gives the industry invaluable competitive ammunition.

George S. Jones, Jr., vice president Servel, Inc., Evansville, Ind., in outlining his company's estimate of "Commercial Gas Refrigeration in 1941," pointed to the recent decision of his company (in cooperation with the Association's Commercial Refrigeration Committee) to concentrate sales effort in two areas where all conditions are most favorable for properly promoting this class.

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Canadian Gas Association

W. J. Pead, Jr., of Montreal, was elected president of the Canadian Gas Association at the 34th annual convention of that group held on May 20 and 21 in the Royal Connaught Hotel, Hamilton, Ontario. He succeeds J. B. McNary of Hamilton.

Also appointed to office were: F. D. Howell, Brantford, first vice president; Allan A. Harris, Jr., Winnipeg, second vice president; George W. Allen, Toronto, secretary-treasurer. The Executive Committee includes: K. L. Dawson, Halifax; C. W. Delorey, Quebec; George Page, Montreal; W. H. Munro, Ottawa; W. C. Philpott, Toronto; A. J. Strain, Toronto; J. B. McNary, Hamilton; Julian Garrett, Edmonton, and John Deillor, Vancouver.

The program of the meeting included addresses by the following: H. P. Nagel, educational director, Dominion Natural Gas Co. Ltd.; Edward J. Tucker, director and general manager, Consumers' Gas Co. of Toronto; Major T. J. Strickler, president, American Gas Association; R. M. Conner, director, A. G. A. Testing Laboratories; A. E. Lee, assistant to vice president, Servel, Inc.; A. J. Strain, superintendent, Domestic Sales Division, Consumers' Gas Co. of Toronto; and M. J. Gardner, supervisor of Industrial Gas Division, Montreal Light, Heat and Power Consolidated, Montreal.

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New England Gas Ass'n

Three meetings of the New England Gas Association were held during May; the Industrial Division Meeting at the Algonquin Club, Bridgeport, Conn., on May 21; the meeting of the Sales Division at the University Club, Boston, Mass., on May 23; and the Accounting Division meeting at the Malden and Melrose Gas Light Co. on May 27.

The theme of the Industrial Division gathering was "Defense and Low-Cost Housing," according to George A. Carlson, secretary-treasurer of that group, and the subject was well covered by several papers. Among those presented were "The Part Gas Utilities Should Play in Defense and Low-Cost Housing," by A. C. Shire, director of Technical Research, U. S. Housing Authority, and "Symposium on Defense and Low-Cost Housing," by H. S. Christman, sales manager, the Philadelphia Gas Works Co., and B. H. Dingley, Jr., manager, appliance sales, The Hartford Gas Co.

The meeting of the Sales Division featured four addresses: "How I Sell Water Heaters," by Thomas C. Roche, Boston Consolidated Gas Co.; "Hot Water Service as the Woman Views It," by Katherine Fisher, director, Good Housekeeping Institute; "The Question as a Sales Tool," by Oscar T. Smith, professor of Merchandising and Salesmanship, College of Business Administration, Boston University; and "Water Heating in the New-Building Market," by Ralph L. Towne, Sales Promotion manager, Surface Combustion Corp.

At the Accounting Division dinner, papers were presented by G. W. Rogers, auditor, Central Vermont Publice Service Corp. on "Continuing Property Records in Our Company," and by Hall M. Henry, assistant to the president, New England Gas and Electric Association, who spoke on "What I Expect of the Accounting Department." In addition a panel discussion, "Showing Merchandise Installment Accounts on Gas Bills," was presented by Willard A. Miller, chairman, George S. Lees, Benjamin D. Meredith, Lester N. Odams, and Fred R. Todd.

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Michigan Gas Association

The annual convention of the Michigan Gas Association, to be held in the Grand Hotel, Mackinac Island, Mich., on June 30, July 1 and 2, will have as a tentative program the following, according to Albert G. Schroeder, secretary-treasurer of the Association.

Monday, June 30, Joint Session with Michigan Electric Light Association: Address by Miss Sarah M. Sheridan, vice president of The Detroit Edison Co.; and an address by James E. McCarthy, Dean, College of Commerce of the University of Notre Dame—"The Accounting Department and Its Responsibility to Management."

Tuesday, July 1: Address of president Fred

Delegates to the A. G. A. Distribution Conference, held in Pittsburgh, April 23-25.

P. Cope, division manager, Consumers Power Co., Saganaw, Mich.; address by Major Alexander Forward, managing director, American Gas Association; paper by Walter L. Kurdelski, assistant sales manager, Michigan Consolidated Gas Co., Grand Rapids—"Sales Prospects Obtained by Employee Co-operation."

Wednesday, July 2: Annual Report on work being done under the Gas Fellowship at the University of Michigan—J. E. Spindle, chairman of Technical Committee. and professor Alfred H. White and professor Elmore S. Pettyjohn; "A Review of the Present Natural Gas Situation in Michigan" by chairman J. E. Spindle; "A Case Study of a Gas Distribution System" by R. E. Townsend, former holder of Fellowship; "Analysis of Soil Conditions Prior to Installing Underground Pipes"; and "Corrosive Conditions and Methods of Pipe Protection."

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P.C.G.A. June Meeting

Modern methods of selling gas service will be presented by leaders in the gas industry at the annual Pacific Northwest Conference of the Pacific Coast Gas Association which will be held in Portland, Ore., June 9 and 10 in the auditorium of the Public Service building.

Heading the list of distinguished salesmen of the gas industry will be W. E. Derwent, vice president of the Geo. D. Roper Corp. and president of the Association of Gas Appliances and Equipment Manufacturers, and George S. Jones, Jr., vice president and general sales manager of Servel Inc. Mr. Derwent will speak on "The National Picture for Gas Appliances" and Mr. Jones will talk on "The Appliance Salesman in National Defense." The sales and commercial managers of Pacific coast companies will present up-to-the-minute methods which are contributing to the great growth of gas service sales in this area.

All meetings will be held in the auditorium on the third floor of the Public Service building at Southwest Sixth Ave. and Salmon St., only two blocks from the Heathman hotel, which has been designated as headquarters for the convention. Hotel reservations may be made by writing direct to the hotel in care of John J. Winn, Jr., commercial manager of Portland Gas & Coke Co.

R. G. Barnett, vice president and general manager of Portland Gas & Coke Co. and a director of the Pacific Coast Gas Association, is chairman of the committee in charge. Clifford Johnstone, managing director of the P. C. G. A., has worked with Mr. Barnett arranging an informative program.

Robert A. Hornby, vice president of the Pacific Lighting Corp. and president of the Pacific Coast Gas Association, will be the general chairman.

The first day's conference will convene at 2:30 P. M. Monday, June 9, after which will follow talks by Paul B. McKee, president of Portland Gas & Coke Co.; W. E. Derwent; O. R. Doerr, general sales manager of the Pacific Gas and Electric Co. and chairman of the sales and advertising section of the Pacific Coast Gas Association; W. M. Jacobs, general superintendent of sales, Southern California Gas Co.; John E. Bogan, sales promation manager, range division, Association of Gas Appliance and Equipment Manufacturers, and Norman R. McKee, vice president, Southern Counties Gas Co. and member of the American Gas Association on Community Development.

Meeting at 10:00 A. M. June 10 will be the Seminar on holding and developing business under the chairmanship of R. E. Fisher, vice president of the Pacific Gas and Electric Co. Four main talks will be given at this meeting: John Hodgkins, Northwest sales representative of the James Graham Manufacturing Co.; J. C. Gilbert, Santa Monica Division Manager, Southern Counties Gas Co.; H. W. Edmund, sales manager, Coast Counties Gas and Electric Co., and J. E. Kern, supervisor domestic sales, Southern California Gas Co.

At the luncheon at 12:15 at the Heathman hotel, E. B. MacNaughton, president of the First National Bank of Portland will be presented as the main speaker. James F. Pollard, president of the Seattle Gas Co. will be chairman. The afternoon Seminar will begin at 2:00 P. M. in the auditorium of the Public Service building, with talks by J. H. Gumz, industrial engineer of the Pacific Gas and Electric Co. and chairman of the commercial and industrial sales committee of the Pacific Coast Gas Association; T. E. Roach, president, Washington Gas & Electric Co.; Ralph Calkins, Pacific Northwest manager of McCann-Erickson, and John J. Winn, Jr., commercial manager of Portland Gas & Coke Co.

The conference will be closed with a playlet "The Bride Saves the Business," written and directed by Rita Calhoun, home service director of Portland Gas & Coke Co.,

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Home Service Conference

The Home Service Conference, sponsored by the Home Service Committee of the American Gas Association in cooperation with the Household Technology Department of the College of Home Economics at Syracuse University, will be held in Syracuse, N. Y., July 7 and 8, 1941. Program arrangements are being made by Elizabeth Sweeney, Instructor in the Household Technology Department. Miss Sweeney was chairman in 1937 of the A.G.A. Home Service Committee.

July 7 and 8 are the opening days of the University summer school, and speakers from the summer faculty will be available to outline recent developments in the field of home economics. The program will include also representatives from home service itself, —through an actual demonstration, a home call skit and group discussions.

Three of the sessions will be held in Maxwell Auditorium at Syracuse University, with the fourth session where the demonstration and home call skit wil be given, in the Home Service Auditorium of the Central New York Power Corp., at Syracuse with Miss Margaret Burlingham, home service director as hostess.

Jessie McQueen is home service counsellor for the American Gas Association.

CALENDAR

June

Association of Gas Appliance and Equipment Manufacturers — Ambassador Hotel, Los Angeles, Calif., June 3-5.

Pacific Coast Gas Association Northwest Conference—Portland, Ore., June 9 and 10.

L. P. G. A. Pacific Coast Section — San Francisco, Calif., June 9 and 10.

Pacific Heating and Air Conditioning Exposition—San Francisco, Calif., June 16-20.

Michigan Gas Association—Grand Hotel, Mackinac Island, Mich., June 30, July 1 and 2.

August

Appalachian Gas Measurement Short Course—Campus, University of West Virginia August 18-20.

September

Mid-West Gas School and Conference —Ames, Iowa, September 8-10.

Annual Convention, Pacific Coast Gas Association—Del Monte, Calif., September 10-12.

Empire State Gas and Electric Association—Saranac Inn, Saranac, N. Y., September 11-12.

October

23rd Annual Convention, American Gas Association—Atlantic City, N. J., the week of October 20, 1941.

P.U.A.A. Lists Better Copy Winners

AT THE recently-held annual convention of the Public Utilities Advertising Association in the Hotel Statler, Boston, Mass., on May 26 and 27, a comprehensive and informative program was presented those present, under the chairmanship of J. V. Macdonald, of Boston, Mass., head of the program committee. New officers as elected by delegates at the convention are:

President A. C. Joy, Pacific Gas and Electric Co., advertising and publicity manager, San Francisco.

Vice President, Miss Clara Zillessen, Philadelphia Electric Co., advertising manager, Philadelphia.

Second Vice President, Thomas H. Spain, Public Service Electric and Gas Co., advertising manager, Newark, N. J.

Third Vice President, J. V. Macdonald, Boston Edison Co., publicity director, Boston.

Secretary, E. N. Pope, California Power and Light Co., director of advertising, Raleigh, N. C.

Treasurer, Dale Remington, Wisconsin Public Service Corp., advertising manager, Green Bay, Wis.

Director for One Year, H. J. Rowe, Iowa Electric Light and Power Co., Cedar Rapids, Iowa.

Director for Two Years, H. W. Olcott, Bozell-Jacobs, Indianapolis, Ind.

Directors for Three Years, R. G. Kenyon, Southern California Edison Co., advertising manager, Los Angeles; Robert Plowe, Commonwealth Edison Co., manager, publicity and advertising, Chicago, Ill.; R. I. Seymour, Kansas City Power and Light Co., advertising manager, Kansas City, Mo.

One of the primary features of the meeting was the announcement of the prize winners of the association's annual better copy contest, awards being presented for outstanding advertisements and promotional endeavors through the use of various media. The awards were made as follows:

For Public Relations Newspaper Advertising:

National Award: Consolidated Edison Co. of New York, Inc., New York City, N. Y.

Regional Awards: The Bridgeport Gas Light Co., Bridgeport, Conn.; Northern States Power Co., Minneapolis, Minn.; Lone Star Gas Co., Dallas, Texas; Puget Sound Power & Light Co., Seattle, Wash.; The Cincinnati Gas & Electric Co., Cincinnati, Ohio; Louisiana Power & Light Co., New Orleans, La.

For Gas Load Building Newspaper Advertising:

National Award: Public Service Co. of Northern Illinois, Chicago, Ill.

Regional Awards: Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.; Wisconsin Public Service Corp., Green Bay, Wis.; Providence Gas Co., Providence, R. I.; Pacific Gas & Electric Co., San Francisco, Calif.; Lone Star Gas System, Dallas. Texas; New Orleans Public Service Inc., New Orleans, La.

For Gas Merchandise Newspaper Advertising:

National Award: Dallas Gas Co., Dallas, Texas.

Regional Awards: The Bridgeport Gas Light Co., Bridgeport, Conn.; Atlanta Gas Light Co., Atlanta, Georgia; Rochester Gas & Electric Co., Rochester, N. Y.; Southern California Gas Co., Los Angeles, Calif.; The Cincinnati Gas and Electric Co., Cincinnati, Ohio; Sioux City Gas & Elec. Co., Sioux City, Iowa.

For Campaigns for All Utility Companies:
National Award: West Penn Power Co. Pittsburgh, Pa.

Special Citation: Hartford Electric Light Co., Hartford, Conn.

Regional Awards: Puget Sound Power & Light Co., Seattle, Wash.; Nebraska Power Co., Omaha, Neb.; Texas Power & Light Co., Dallas, Texas; The Cincinnati Gas & Electric Co., Cincinnati, Ohio; New Orleans Public Service, Inc., New Orleans, La.

For Employee Magazine:
National Award: Philadelphia Electric Co., Philadelphia, Pa.
Regional Awards: San Diego Gas & Elec. Co., San Diego, Calif.; Nebraska Power Co., Omaha, Neb.; The Connecticut Light & Power Co., Waterbury, Conn.; West Texas Utilities Co., Abilene, Texas; The Peoples Gas Light & Coke Co., Chicago, Ill.; Virginia Electric & Power Co., Richmond, Va.

For Employee Newspapers:
National Award: The Cincinnati Gas & Electric Co., Cincinnati, Ohio.

Regional Awards: Lone Star Gas System, Dallas. Texas; Iowa Electric Light & Power Co., Cedar Rapids, Iowa; Public Service Elec. & Gas Co., Newark, N. J.; Florida Power & Light Co., Miami, Fla.; Puget Sound Power & Light Co., Seattle, Wash.;

For Bill Enclosures—Residential Customers:
National Award: The Connecticut Light & Power Co., Waterbury, Conn.

Regional Awards: B. C. Electric Railway Co., Ltd., Vancouver, B. C.; Northern States Power Co., Minneapolis. Minn.; Public Service Co. of Oklahoma, Tulsa, Okla.; Central Hudson Gas & Elec. Corp., Poughkeepsie, N. Y.; Louisiana Power and Light Co., New Orleans, La.; The Peoples Gas Light & Coke Co., Chicago, Ill.

For Direct Mail—Residential:
National Award: Nebraska Power Co., Omaha, Neb.
Regional Awards: Southern California Edison Co., Los Angeles, Calif.; Public Service Co. of No. Ill., Chicago, Ill.; The Connecticut Light & Power Co., Waterbury, Conn.: Equitable Gas Co., Pittsburgh, Pa.; Texas Power & Light, Dallas, Texas; Georgia Power Co., Atlanta, Ga.

For Direct Mail—Industrial and Commercial:
National Award: The Hartford Electric Light Co., Hartford, Conn.
Regional Awards: Public Service Electric & Gas Co., Newark, N. J.; Southern Calif. Edison Co., Los Angeles, Calif.; Texas Power & Light Co., Dallas, Texas; Nebraska Power Co., Omaha. Neb.; Carolina Power & Light Co., Raleigh, N. C.; The Cincinnati Gas & Elec. Co., Cincinnati, Ohio.

For Special Booklets, Pamphlets, Etc.:
National Awards: Commonwealth Edison Co., Chicago, Ill.
Regional Awards: Sioux City Gas & Elec. Co., Sioux City, Iowa; So. Calif. Edison Co., Los Angeles, Calif.; The Conn. Light & Power Co., Waterbury, Conn.; Lone Star Gas System, Dallas, Texas; Alabama Power Co., Birmingham, Ala.; Consolidated Edison Co. of N. Y. Inc., New York.

For Window or Inside Displays:
National Award: Wisconsin Michigan Power Co., Appleton, Wis.
Regional Awards: Southern California Gas Co., Los Angeles, Calif.; Buffalo Niagara Elec. Corp., Buffalo, N. Y.; Providence Gas Co., Providence, R. I.; Wisconsin Michigan Power Co., Appleton, Wis.; Cincinnati Gas & Elec. Co., Cincinnati, Ohio.

For Outdoor Advertising:
National Award: Southern California Edison Co., Los Angeles, Calif.
Regional Awards: Consolidated Edison Co, of N. Y. Inc.. New York City; The Hartford Electric Light Co., Hartford, Conn.; El Paso Electric Co., El Paso, Texas; Commonwealth Edison Co., Chicago, Ill.; Nebraska Power Co., Omaha, Neb.; New Orleans Public Service Inc., New Orleans, La.

For Radio Advertising:
1st Award—Consolidated Edison Co., New York, N. Y.
2nd Award—Lone Star Gas Co., Dallas, Texas.
3rd Award—Louisiana Power & Light Co.,
Citation—Single program submitted by Hartford Elec. Light Co., Hartford, Conn.
National Award: Florida Power and Light Co., Miami, Fla.

Regional Awards: The Peoples Gas Light & Coke Co., Chicago, Ill.; Texas Power & Light Co., Dallas, Texas; Pacific Gas & Elec. Co.. San Francisco, Calif.; The Conn. Light & Power Co., Waterbury, Conn.; Duquesne Light Co., Pittsburgh, Pa.; Wisconsin Michigan Power Co., Appleton, Wis.

Papers were presented on the following topics: "A Consumer Looks at Advertising," "The Plus of Informative Labeling," 'Setting Utility Sails to Meet New Winds," "Utility Advertising Evaluated," and "The Utility Man's Responsibility in the Defense Program."

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Elkhorn Valley Gas Company Incorporates for $100,000

Articles of incorporation for the Elkhorn Valley Gas Co. were filed recently. The company was incorporated for $100,000. Board of directors is comprised of C. E. Malmsten, Salina E. Malmsten and Robert Malmsten.

The company, located in Scribner, Neb., will supply gas to Scribner and Hooper, Neb.

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Koppers Announces Change

The Chicago, Ill., offices of The Koppers Coal Co. and the Bartlett Hayward and Wood Preserving divisions of Koppers Co. will be consolidated about May 1, it is announced by Walter Rothenhoefer, general manager of sales for the coal company. The new offices are being located in the Railway Exchange Building, 224 South Michigan Ave.

Recovery Bill Proposed for Oklahoma City Field

AS A result of a two-year engineering survey, a majority of the oil and gas producing interests operating in the Wilcox sand zone of the Oklahoma City field, agreed upon a secondary recovery bill which was introduced in the Oklahoma State Senate on April 28.

The bill is drawn so that it applies only to the Oklahoma City field. It permits unitization of leases and the use of natural gas, water flooding or other secondary recovery methods which may be approved by the state corporation commission, in the production of oil and gas from a common reservoir which cannot be recovered by primary methods.

A hearing before the Senate committee on oil and gas, April 30, developed engineering estimates that upward of 80,000,000 barrels of oil in the Oklahoma City field can be recovered by repressuring which otherwise will remain in the ground and become an economic waste. The bill is backed by the Oklahoma City Secondary Recovery Association, which includes about 30 oil and gas operating companies. The association stated at the hearing that, while several voluntary plans for secondary recovery are in operation in Oklahoma, including repressuring with natural gas in the South Burbank and Billings fields, such a plan could not be carried out in the Oklahoma City field except by legislative authority because of the wide diversification of lease and royalty interests in the field. This would make it impossible even to contact many of the interest holders for voluntary agreements.

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Tinned Copper Now Used For Refrigerator Trays

Tinned copper ice cube trays are now being supplied by Servel, Inc., Evansville, Ind., to replace aluminum trays which have been removed from the Servel Electrolux refrigerators in accordance with regulations of the Government's Office of Production Management, George S. Jones, Jr., vice president and general sales manager of the company, announced.

The grids in the new trays will be either of tinned copper or of rubber, the type of grid supplied being dependent upon the model of the refrigerator.

Servel is rapidly filling all back orders for the new tinned copper trays to replace the aluminum trays gas companies and dealers removed to comply with the O. P. M. order, which was a defense measure. The new tinned copper trays are being sent out in packages containing the required number of trays for each model size.

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Western Metal Congress Held in Los Angeles

The Western Metal Congress and Exposition was held from May 19 to 23 in the Pan-Pacific Auditorium and Biltmore Hotel, Los Angeles. W. H. Eisenman, secretary of the American Society for Metals, estimated that 3000 technical engineers, metallurgists, purchasing agents and paint operators had attended the technical sessions and that 50,000 metal workers and engineers identified with the fabrication of steels had viewed the Exposition.

The American Welding Society held its regional conference on the first four mornings of the event in the Biltmore Hotel, while the American Foundrymen's Association met on the latter two mornings and the final evening. Sessions of the American Society for Metals took place mornings, afternoons and nights on all five days.

Noted technical authorities from all parts of the country delivered talks on new alloys created in the prevailing war emergency. They discussed the chemistry, fabrication, treatment and testing of metals, as well as their applications. At the same time, many lectures were designed primarily for oil, chemical, general manufacturing and mining industries.

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Pacific Lighting Corp. to Build Repressuring Plant

THE Goleta gas field, near Santa Barbara, Calif., which includes the More ranch gas wells drilled by General Petroleum, was recently acquired by the Pacific Lighting Corp., San Francisco, Calif., which company has already begun construction of a large compressor plant for the purpose of transforming the field into a gas storage area.

The completed plant, according to company advices, will consist of five units, capable of handling 30,000,000 cu. ft. of gas per day. The installation, it was reported, will cost approximately $84,543, and will consist of four new 650-hp. Ingersoll-Rand units in addition to one 300-hp. Cooper-Bessemer unit completed on the More lease a year ago for experimental repressuring purposes.

It was indicated that the new Ingersoll-Rand units will be the most modern type of V-units available. Each unit has eight cylinders, each cylinder being directly connected to two horizontal double-acting compressors. Each unit will weigh 85,000 pounds. The main engine building will be 124 ft. long and 29 ft. wide, with an auxiliary building at one end 58 ft. long and 30 ft. wide. In addition, the company will build four six-room residences to the west of the plant for employees. A crew of 15 men will be required to operate the plant and field facilities. It is expected to have the entire plant completed by July 1.

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A.G.A. Receives 500 Entries For Prize Paper Contest

Well over 500 entries were received at the closing date, May 1, of the Prize Paper Contest on the subject "How I Would Increase Public Acceptance of Gas as the Ideal Domestic Fuel," conducted by the Committee on Personnel Practices of the American Gas Association, according to the chairman, Roland S. Child of Poughkeepsie, N. Y. The entries represent 74 companies in 30 states and the District of Columbia and Canada.

The difficult task of judging has been started and president T. J. Strickler and vice president George S. Hawley of the Association will select the final winners of the $150 and $75 cash prizes. The winners will be announced at the convention in Atlantic City next October. In addition to the national prizes many of the companies awarded prizes for the best papers submitted by employees.

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Pacific Gas and Electric To Expand Facilities

The Pacific Gas and Electric Co., San Francisco, Calif., has applied to the California Railroad Commission for authority to invest $761,800 in a new 51-mile 12¾-in. gas line from the Kettleman compressor station to Fresno, Calif. Previously it has used the Southern California Gas Co. line over this route, but increased business has made the new line necessary. It will supply Fresno, Madera and Merced counties, Calif.

Congress Hears Pipe Line Eminent Domain Bill

INTRODUCED by Congressman Cole of Maryland, and personally approved by President Roosevelt, a Bill was recently presented to Congress as a part of the report of the Petroleum Subcommittee on pipe lines. This Bill, as read by Cole, confers upon an undesignated government agency and private companies the authority to exercise the right of eminent domain in the building of pipe lines upon a proclamation by the President that the lines are necessary for National Defense.

Other provisions of the Bill provide for the President's authorizing the construction of pipe lines by an agency or department of the government; for the President's advancing money for the construction of pipe lines; for the authority for the President to relieve lines constructed under the Act from duty or liability under the Interstate Commerce Act and the Natural Gas Act; and for pipe lines constructed under the Act to be constructed and operated subject to "such terms and conditions as the President may prescribe as necessary for National Defense Purposes."

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Merged Firms Announce Construction Program

The newly formed Kansas-Nebraska Natural Gas Co., Inc., representing the consolidation of the Kansas Pipe Line and Gas Co. of Phillipsburg, Kan., and the Nebraska Natural Gas Co. of Topeka, Kan., announced their plans recently for a $1,000,000 construction program, including an 8-in. pressure line from the Hugoton, Kan., gas field to Cambridge, Neb.

The sale of the Nebraska company and the consolidation were announced recently by S. D. Whiteman, general manager for the new firm. Headquarters will be at Phillipsburg, Kan.

The Kansas-Nebraska firm will supply gas at wholesale to 53 towns and at retail to 31 towns, with more to be added when the new pipe line is completed, Whiteman said. Work on the new line was to have begun by now.

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Shell Oil Co. to Erect Second Toluene Plant

Shell Oil Co., Inc., recently announced the awarding of a contract for the erection of an additional petroleum toluene plant at its Houston, Texas, refinery. According to Dr. R. H. Waser, manager of Shell's Houston refinery, this plant will be a duplicate of America's first petroleum toluene plant which went into operation there last December. The combined capacity of these plants will be 4,000,000 gals. of toluene per year from which about 40,000,000 lbs. of T.N.T. can be manufactured.

The contract for the new Shell plant has been awarded to the C. F. Braun Co. of Alhambra, Calif., and is expected to be completed by October 1. The two toluene plants represent an investment to Shell of more than $1,000,000.

■ ■

New United Gas Office

A gala formal opening of a new office in Liberty, Texas, was held on April 26, L. A. Wright, district manager of United Gas Corp., announced recently. Free refreshments were served, and the new office, tastefully decorated in an attractive color scheme, was thrown open to public inspection.

SALES Slants

San Franciscans Sweep CP Contest

THE top eight men in the United States winning prizes in the CP Range sales contest sponsored by the American Gas Association were all from the San Francisco Bay area. They were:

First prize ($25): E. E. Whelan, The Emporium, San Francisco.

Second prize ($20): H. F. Baldwin, Nathan Dohrmann Co., San Jose.

Third prize ($15): R. J. Welsh, Jackson Furniture Co., Oakland.

Fourth prize ($10): F. P. Phillips, Sterling Furniture Co., San Francisco.

Fifth prize ($10): Walter Bray, The Emporium, San Francisco.

Sixth prize ($5): Leo Allampress, Nathan Dohrmann Co., San Jose.

Seventh prize ($5): Art Sammann, Lachman Bros., San Francisco.

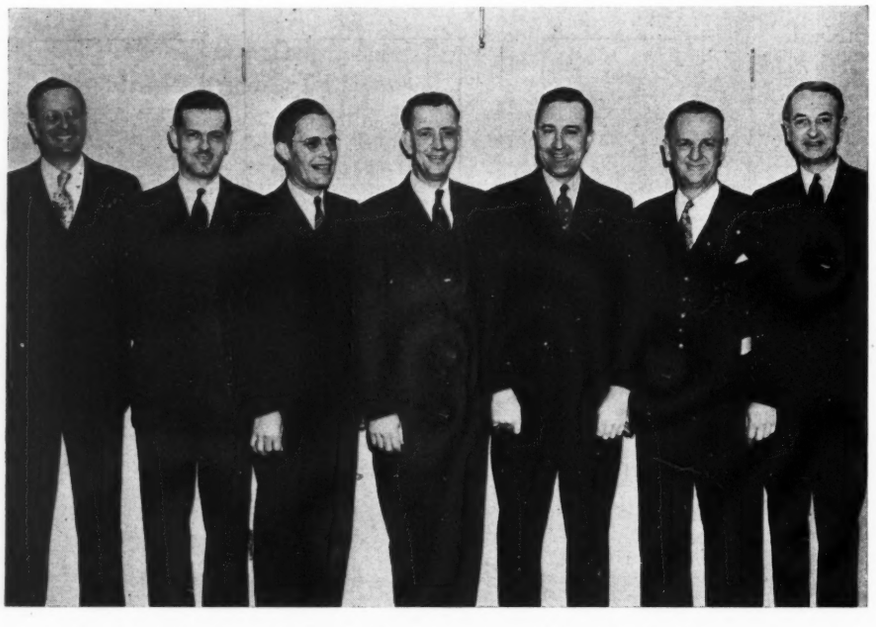
Eighth prize ($5): Harold Mullee, J. H. Wiley & Co., San Francisco.

Each of these eight winners was located in the territory served by the Pacific Gas and Electric Co., and competed against salesmen in territories throughout the country served by the Consolidated Edison Co., of N. Y., The Brooklyn Union Gas Co., Southern California Gas Co., the Peoples Gas Light & Coke Co., Southern Counties Gas Co., The Philadelphia Gas Works Co., Kings County Lighting Co., Boston Consolidated Gas Co. and Michigan Consolidated Gas Co.

All prizes were donated by the CP Range Manufacturers of the Association of Gas Appliance and Equipment Manufacturers.

Each dealer and dealers' salesmen in the area eligible to win paid an entrance fee, and prizes were based on sales of CP ranges for the month of March, 1941. The standings were determined by the officers of the CP Ranger Club and were based on verified reports forwarded by the various local Ranger Club representatives.

E. E. Whelan, winner of the first prize, has been a Star Ranger since 1939 and has already sold enough ranges to qualify as a Star Ranger for 1942, his third consecutive year although he has not yet received his award. The prizes were awarded by local Gas Appliance Society units.



Reading from left to right: Lewis L. Meyer, vice president of the San Francisco unit of the Gas Appliance Society; CP prize winners Art Sammann, Walter Bray, Harold Mullee, E. E. Whelan; Frank Talcott, CP Ranger Club representative for the San Francisco district; Clifford Johnstone, managing director, Pacific Coast Gas Association.

Sales Insurance

Perhaps it isn't exactly an insurance policy, but the folks at the Fall River Gas Works Co. in Fall River, Mass., are working under the theory that placing a new gas range in a customer's home insures that customer against the wiles of competition for at least ten years, and to that end set out in March to sell 180 gas ranges.

With about 25,000 customers and 10 district salesmen, this seemed like a pretty good job along with the other for that month. Special emphasis was placed on tying in with the national CP program and as a result 43 CP ranges were sold during the month with two of the Fall River salesmen winning second and sixth awards in the national contest.

When the campaign ended on March 31 a total of 340 ranges had been sold, but this was not the whole story because a two-weeks grace period is given the salesmen and customers in which to finish up the activity during April. In spite of the fact that the salesmen began work on two new campaigns on April 1, they were able to sell in addition 145 ranges during the first 12 days bringing the total to 485 ranges or about 2% of the domestic meters.

Not only has this given the Company a splendid start for the year but the progress made during March, which is actually earlier than the normal buying season, will continue to produce results far into the summer.

■ ■

Eight Hit the Jackpot

If we had a contest of the month in G A S, it would be that put on for the Ohio Fuel Gas Co. by Columbus District Manager Frank S. Williams. There were eight winners in this contest; the result of eight exactly correct guesses as to the cost of gas used for cooking, refrigerating, water heating and house heating in the Andrew N. Hauer all-gas home in Columbus during a 12 month period. Total amount of the 12 monthly bills, dating from Dec. 18, 1939 to Dec. 18, 1940, was exactly $73.00.

More than 3500 estimates were made during the week at the gas company's display booth in the all-gas home. It is most interesting to note that more than 80% were in amounts above the actual cost of the gas used. The Hauer home is a six-room residence of modern construction, equipped with gas range, gas refrigerator and gas furnace. The home was selected because it is a typical modern, all-gas residence, occupied by an average family.

Add 75% Discount Plan

Recently in this department we presented in some detail an account of the 75% Discount Plant of Wisconsin Public Service Corp., which features gas water heaters and gas ranges sold to new users. It has been reported that Wisconsin Public Service Corp. is planning a renewal of this campaign for 1941 and that this topic held the spotlight at a recent one-day meeting of all company gas sales people at Greenbay. In the photograph we see A. C. Davey, general commercial manager, left, inspecting with H. A. Watson, of the CP Gas Range Promotional committee, a chart of the firm's increased gas business. During the past 10 years records show a 20% gain in customers and a 3.9% gain in residential sales (less space heating), both records being far ahead of state and national averages.

■ ■

Knights of the Dotted Line

Through the kindness of E. V. Voneman, we have received a copy of the Prospectus covering the 1941 Spring Sales Campaign of the Montana-Dakota Utilities Co. and are much impressed by the ancient scrolling, crowned lions and horned unicorus which greeted us upon opening the package.

We can see that the gas people in Montana have succeded in escaping an all-too realistic world by staging thier sales efforts in the mythical kingdom of Mondakonia, and by awarding to each other such ancient titles as Page, Squire, Herald, and Commander for sales proficiency. Top award is the Sword of Merit. In making this escape to ancient times and far off places, the Montana company has changed the name of its weekly sales publication from "Sales Bull" to "The Mondakonia Herald."

Forerunner of Progress

THERE are those who would say that we were stretching a point too far to proclaim *salesmanship* as the forerunner of progress. In rebuttal, the opponents of this proclamation might point with smug satisfaction to inventive genius and its products such as the steam engine, the telephone, the electric bulb, the automobile.

Consider the items named. A prejudiced public threw up opposition to their acceptance that could have meant defeat. It was not the things themselves but salesmanship that put them over.

The steam locomotive met and overcame such drastic opposition as a law in New York prohibiting the laying of track; and the ministers' fight against it declaring it to be "in direct opposition to the laws of God"; and the medical societies' condemnation which warned that "the air would be poisoned and birds would die of suffocation."

In 1865, a typical editorial appeared in an Eastern newspaper which read: "Well-informed people know it is impossible to transmit the human voice over wires and, were it possible to do so, the thing would have no value." No less than 44 years ago, a New York paper ridiculed a man who had the "crazy notion" of supplanting gas lights with electricity. There are those who live today who once scoffed at the automobile as a "fool contraption."

Strangely enough, these inventions and many others did not come into being because people wanted them. They were created by men of vision and *sold* by men of vision.

People don't buy — they are sold.

DOTTED LINE ROSCOE · By Bob Crosby

"But, Roscoe, dear—why can't we get the industrial rate?"

INDUSTRY *Personalities*

• Appointment of **W. R. Davis** as personnel manager of the Southern California Gas Co., effective May 1, has been announced by **F. S. Wade,** president and general manager of the company. Mr. Davis succeeds **Guy W. Wadsworth, Jr.,** in this post. Mr. Wadsworth recently was elected vice president in charge of employee relations. Mr. Davis became associated with the gas company in 1937 as personnel representative and became assistant personnel manager the following year. His business career began in 1926 when he was employed by the Lomita Gasoline Co. of Long Beach. He started as a field chart collector and subsequently worked in various departments, including accounting, measurement, and plant operation. He became assistant superintendent of that company in 1932.

W. R. DAVIS

• The National Supply Co., Pittsburgh, Pa., has announced the election of **Austin W. Clark** as vice president, effective as of April 22, 1941. Previous to joining the National Supply Co. in August, 1940, as assistant vice president, Mr. Clark had been associated for four years with Sears, Roebuck & Co., Chicago, as assistant comptroller. Prior to that time he was for 14 years with the Hearst Publications in New York City as comptroller and treasurer, and was also for four years with the Cerro de Pasco Copper Corp., in Peru, South America.

• **Lord Halifax,** the British Ambassador to the United States, was in Minneapolis recently attending a joint regional meeting of the St. Paul-Minneapolis Committee on Foreign Relations and the Winnipeg Branch of the Canadian Institute of International Affairs. While there, Lord Halifax and his party visited the main plant of Minneapolis-Honeywell. The Ambassador expressed great interest in the manufacture of precision instruments now in large volume production due to greatly increased demand in the United States for heating controls of all kinds, and also because Minneapolis-Honeywell is engaged on several important defense contracts involving precision instruments for war work.

Lord Halifax signing roster at Minneapolis-Honeywell plant, required of every visitor by defense contract regulations, while C. B. Sweatt, left, vice president, and H. W. Sweatt, president, right, look on.

Lord Halifax and his party could not escape the iron clad rule that everyone entering the plant must state his business and sign the roster. He is shown here signing the visitors' book as **H. W. Sweatt,** president (right), and **C. B. Sweatt,** vice president of the company, look on.

• **1st Lt. W. W. Wallace** of the Army Ordnance Reserve, service engineer of Servel, Inc., Evansville, Ind., has been assigned to active duty with the army at the Savannah Air Base, Savannah, Ga.

• **W. E. Ferguson** of the Ohio Fuel Gas Co. was named a vice chairman of the eastern division of the American Petroleum Institute before that group ended its two-day annual conference in Pittsburgh recently.

• **Holland Rankin,** formerly district manager of the Brenham, Texas, properties of the Community Natural Gas Co., before they were recently sold to the Southwestern Gas Co., has assumed his new duties as foreman of the operating department, Hillsboro district.

• The election of **R. M. Salvant** as vice president and secretary of the Louisiana Power and Light Co. was announced recently by **W. O. Turner,** president, following a meeting of the board of directors in New Orleans. At the same time, the election of **A. M. Naquin** as assistant treasurer became effective. Both Mr. Salvant and Mr. Naquin have long service records with the Louisiana Power and Light Co.

• **Paul C. Walser** has been made sales manager of the Washington County Gas Co., which operates in Johnson City and Elizabethton, Tenn., according to a recent announcement by **H. W. Gee,** general manager. He will replace **O. V. Branson,** recently inducted into the U. S. Army.

Mr. Walser will have charge of the merchandising and advertising of the gas company. **L. B. Hudgins, Jr.,** of Roanoke, Va., will succeed him as chief clerk.

• The 1941 Central Committee on Measuring, Sampling and Testing Natural Gas and Natural Gasoline of the American Petroleum Institute's Division of Production has been appointed, with **F. E. Rice,** Phillips Petro-

TITAN

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for
1. RELIABILITY
2. PERFORMANCE
3. ACCEPTANCE

TITAN WATER HEATER CONTROLS
FOR ALL GASES

THE TITAN VALVE AND MANUFACTURING CO.

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CLEVELAND, OHIO

leum Co., Bartlesville, Okla., as chairman, according to **C. A. Young,** secretary of the division. **George P. Bunn,** also of Phillips Petroleum, is vice chairman, and Mr. Young is secretary.

• **William R. Grew,** for nearly seven years vice president and superintendent of the North Shore Gas Co. Ipswich, Mass., has been advanced and given the post of president and general manager of the company at a meeting held in New York recently. Actively engaged in the utility field for many years, Mr. Grew is a director in the Ipswich Chamber of Commerce and an active participant in other civic movements.

• **Ada Williams,** recently appointed home service director of the Raleigh, N. C., Gas Co., will serve in a similar capacity for the Durham, N. C., Gas Co., according to **Herbert C. O'Briant,** manager of that company. Miss Williams will make her home in Raleigh, but will divide her time between the two cities. A native of New Bern, N. C., she is a graduate in home economics from the Women's College of the University of North Carolina, and has served as a lecturer and demonstrator for Lever Brothers Co., as dietitian for the United Air Lines and as home service director for the Virginia Electric and Power Co.

C. E. MORRIS

• The John Zink Co., Tulsa, Okla., recently announced the appointment of **C. E. Morris** as manager of their Dallas branch, located at 2405 South Harwood. Mr. Morris has a wide acquaintance in Texas, being a Texan and a graduate of the University of Texas. This new branch will carry a wide assortment of John Zink floor furnaces, unit heaters, and industrial burners, as well as all types of oil production and refinery burners.

• **W. A. Kohloff** has been appointed general superintendent of the Panama City Gas Co., replacing **R. E. Cole** who has retired.

• **Fred Rodgers,** Rodgers Engineering Co., Dallas, Texas, has recently been appointed representative of the L. J. Mueller Furnace Co. of Milwaukee, Wis.

• **T. T. Arden,** sales manager of the Robertshaw Thermostat Co., has announced two additions to the company's sales-engineering staff. They are **W. D. Mastin,** who has been made manager of the southern division, with headquarters in Chattanooga, Tenn., and **John B. Selover,** who has the assignment of sales-engineer in the Chicago office.

Mr. Mastin is a graduate of the Alabama Polytechnic Institute, with a degree of mechanical engineer, and Mr. Selover was given an electrical engineering degree by Ohio University. Both men went through an intensive course of training in the various departments of the Robertshaw research laboratory at Pittsburgh, the engineering and manufacturing divisions at Youngwood, Ohio, and the St. Louis plant of the American Thermometer Co. before being appointed to the Robertshaw group of operating companies.

• The first meeting of the Guild of Ancient Supplers of Gas Appliances, Skills, Gins, Accessories and Substances ever held in the Southwest was called by **Carl Sorby,** Geo. D. Roper Corp., on May 6 in the Adolphus Hotel, Dallas, Texas. The meeting was attended by **Frank Packer,** Payne Furnace & Supply Co.; **Romus Bergh,** Geo. D. Roper Corp.; **E. R. Myhre,** General Gas Light Corp.; **Bill Hall,** General Gas Light Corp.; and **Carl Sorby.**

• For more than a century, The Franklin Institute in Philadelphia has been singling out workers in science and industry whose contributions to public welfare merit special commendation. At the annual award of medals and certificates this year, the Walton Clark Medal will be awarded to **Raymond Mower Conner,** director of the Gas Appliance Testing Laboratory of the American Gas Association.

R. M. CONNER

This medal is awarded to the author of the most notable advance in knowledge or improvement in apparatus; in method concerning the science and art of gas manufacture and its distribution or utilization in the production of heat, illumination, or power.

Mr. Conner has been director of the Gas Appliance Testing Laboratory since its foundation in 1925 and under his direction much notable work has been accomplished. Three primary points of view have been kept in mind in this work. They cover minimum requirements for satisfactory performance, substantial and durable construction, and safe operation. Some idea of the amount of work which must be undertaken may be gained from the fact that approval of a domestic range required 250 separate tests.

As a result of 15 years work, 27 American standards have been developed covering ranges, central heating plants, water heaters, space heaters, and refrigerators, and more than 17,000 different models of appliances have been listed on their approved list. Very important research work has also been undertaken by the staff of the laboratory in technical questions involved in the utilization of gas.

The award of the Walton Clark Medal by one of the leading scientific institutions in the country is a fitting tribute of recognition of Mr. Conner's contribution to the safety and the comfort of gas users.

• **Alfred Hirsh** has been appointed general superintendent of the Laclede Gas Light Co., St. Louis, Mo., effective May 1.

For the past 2½ years, Mr. Hirsh has served as assistant to President **L. Wade Childress.** Prior to that, he was assistant secretary and treasurer for a number of years.

Mr. Hirsh started with Laclede in 1908, at the age of 15. Three years later he was made secretary to the comptroller. **C. L. Holman,** at that time president of the company, made Mr. Hirsh secretary to the president. He was made assistant secretary of the company in 1925 and held that position until his appointment as assistant to Mr. Childress in October, 1938.

• **R. J. Vandagriff,** who was appointed sales manager of Laclede Gas Light Co. April 1, succeeding W. A. Hudson, began his utility career with the Des Moines Gas & Electric Co. in 1927. His sales efforts attracted the attention of officials of the Central States Power Co. and he was made merchandise manager of that company, with headquarters at Dubuque, Iowa.

In 1930, Mr. Vandagriff came to St. Louis as merchandise manager for the Laclede company, but resigned two years later to accept a position as merchandise manager for the County Gas Co. He soon was appointed assistant sales manager, a position he held for the past nine years until his recent appointment.

• The election of **Burnett G. Bartley** to the presidency of the Wittmer Oil & Gas Corp., with headquarters in Pittsburgh, Pa., was announced by the board of directors, May 7. He succeeds **George Wittmer, Jr.,** retired. Mr. Bartley formerly was treasurer of the company he now heads which has extensive interests in Pennsylvania, Ohio, Illinois, Michigan and Kentucky. Subsidiaries are The Wittmer Co. and the American Natural Gas Co.

• **R. E. Fisher,** vice president of the Pacific Gas & Electric Co., San Francisco, Calif., is acting as general chairman of the San Francisco citizens committee of the Red Cross Membership campaign. A volunteer corps of 3000 women is making a house-to-house canvass to secure new members.

• His return to his former position as superintendent of the Minnesota Natural Gas Co. was celebrated recently by employees of the company at a reception for **O. M. Hoxie,** former regimental staff officer of the 215th CAC. Mr. Hoxie had been stationed at Camp Haan for the past three months, but returned recently and will take over his former position at the gas company.

• **Martha Jane Tupper,** well-known home economist, formerly associated with Brooklyn Union Gas Co., of New York, has been appointed director of the Home Economics Department of Servel, Inc., Evansville, Ind., it has been announced by **George S. Jones, Jr.,** vice president and general sales manager of the company.

MARTHA JANE TUPPER

Mrs. Tupper brings to Servel a well-rounded experience in the home economics field. Of particular value in her work will be the experience in the home economics activities of gas utility companies secured during her association with the Brooklyn Union Gas Co. She has held important teach- Tennessee State Teachers College. She was also formerly associated with a national women's magazine.

Mrs. Tupper received her Master of Science Degree in home economics from Teachers College, Columbia University, New York, and the Bachelor of Arts Degree from the University of Mississippi, Oxford, Miss. She has also done graduate work in dietetics in the Presbyterian Hospital, Medical Center, New York City.

• **Charles F. Woods,** formerly district sales representative for the Texas Southwestern Gas Co., has been appointed manager of the Brenham office of the company, **H. C. Frizzell,** district manager, announced recently. **W. C. Alley** has been transferred from the Navasota, Texas, office of the company to become service man for the Brenham system.

• **F. L. Fairchild,** president of the Sprague Meter Co., and **H. Ward Cheeseman,** East Coast representative and senior salesman, have just returned from an extensive tour of South America where they contacted their customers and made a survey of the general

F. L. Fairchild and H. Ward Cheeseman, Sprague Meter Co.

situation from a business standpoint. The trip, which was made entirely by air, covered some 19,000 miles and included seven countries, namely, Brazil, Venezuela, Colombia, Ecuador, Peru, Argentina and Chile.

Also announced was the recent election to the board of directors of the Sprague company of **Miss E. L. Ballou,** supervisor of sales of the Sprague Meter Co., and **E. R. Meade,** former vice president of the Standard Oil Co., Buenos Aires, Argentina.

• At the annual meeting of the Chicago Chemists Club, **Edward A. Dieterle,** consulting gas and chemical engineer, with offices at 122 South Michigan Avenue, was elected president of the Club for the ensuing year.

Upon graduating from the University of Illinois, Mr. Dieterle started work as assistant chemist for the Peoples Gas Light & Coke Co. of Chicago and later became assistant superintendent of one of their manufacturing plants. Among other positions held by him prior to his entrance into the consulting field were those of chief chemist, Seattle Gas Co.; assistant chief chemist of the Koppers Co. with laboratories at Mellon Institute of Industrial Research, Pittsburgh.

• **Wayne W. Fitkin,** commercial agent of the Southern Counties Gas Co. of Calif. at Santa Barbara, Calif., an employee of that company since 1919, was called into active duty on May 15 in the Chemical War Service of the United States Army. Captain Fitkin is stationed at Fort Winfield Scott, San Francisco, to which post he has been assigned.

Mr. Fitkin served in the World War, and in 1919 started with the Southern Counties Gas Co. of Calif. at Santa Barbara in the company's chemical laboratory.

• **Frank J. Kalb,** Indianapolis, Ind., recently completed 50 years of service in the gas utility business. His fellow employees celebrated the event with an impromptu party in the main office of the Citizens Gas and Coke Utility. Mr. Kalb, who has been paymaster of the utility and its predecessor companies since 1913, is 70 years old but has no thought of retiring.

Obituaries

Charles B. Jahnke

Charles Bernhardt Jahnke, president and general manager of The Cooper-Bessemer Corp., died at Mercy Hospital in Mount Vernon, Ohio, on May 6. A heart attack, suffered while he worked in the garden of his home on the previous afternoon proved fatal to Mr. Jahnke.

C. B. JAHNKE

Born at Cincinnati, Ohio, in 1889, Mr. Jahnke graduated from the University of Cincinnati, and was for 21 years associated with Fairbanks, Morse & Co., having achieved the positions of chief engineer, works manager, and finally director of engineering. In 1931 he joined the International Harvester Co. Four years later he became affiliated with the Cooper-Bessemer Corp. as its chief engineer. In 1937 he became a vice president and general manager of the corporation and, on December 27, 1940, was elected to the office of president and general manager.

■ ■

Col. George S. Binckley

Col. George S. Binckley, former consulting engineer for numerous public utilities, who spent the last 15 years of his life in scientific research and in developing measuring, specific gravity, and other devices for the gas and oil industries, was killed in an automobile accident May 1 near Salome, Ariz. One of the pioneer hydro-electric engineers in the Western United States, Canada, and Mexico, Col. Binckley extended his interests to mining in those areas.

During World War I he served as a major in the U. S. Army, and after the war edited the Latin-American version of the *Engineering News-Record.*

Col. Binckley was a member of the American Society of Civil Engineers, the American Society for the Advancement of Science, and the American Society of Military Engineers.

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C. G. Murdoch

C. G. Murdoch, assistant secretary and treasurer of Laclede Power & Light Co. and a member of the Board of Directors, died April 20 in St. Louis, Mo.

Mr. Murdoch went to St. Louis in 1914 as assistant commercial manager of The Laclede Gas Light Co. In November, 1938, Mr. Murdoch was elected assistant secretary and treasurer of Laclede Power & Light Company, and on March 28, 1940, he was made a director of the organization, continuing in the office of assistant secretary and treasurer.

■ ■

James W. Barber

James W. Barber, oldest employee of the Ruud Manufacturing Co. and perhaps in point of continuous service, one of the oldest gas water heater salesmen in the industry, died in Pittsburgh, Pa., on April 1, 1941. Mr. Barber joined the sales staff of the Ruud Manufacturing Co. in 1890 and for 41 years traveled the same territory—Western Pennsylvania and Eastern Ohio.

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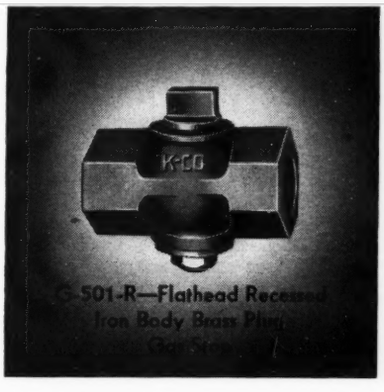
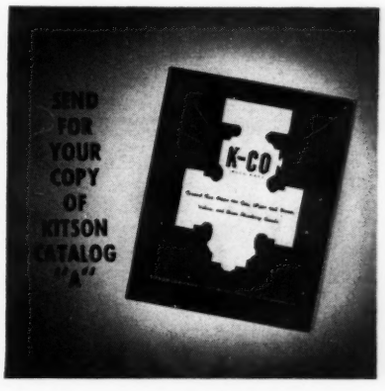
IRON BODY



G-501-R—Flathead Recessed Iron Body Brass Plug Gas Stop

G-515—Lockwing Iron Body Brass Plug Gas Stop



Gas Service Stops; brass or iron body; flat head, lever, square head, lockwing; in Standard, Extra Special or Heavy Service types. Emergency Shut-Off Gas Valves - Meter Bars - Temperature and Pressure Relief Valves.

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GAS STOPS

Heating Exhibit Set for June 16 - 20

GAS heating equipment will be a major attraction at the Pacific Heating & Air Conditioning Exposition in the San Francisco Exposition Auditorium, June 16 to 20. Held under the auspices of the American Society of Heating & Ventilating Engineers, it will be the largest and most comprehensive showing of air conditioning, heating, ventilating and accessory apparatus ever assembled on the Pacific Coast. The Heating, Piping and Air Conditioning Contractors National Association will also meet during the same period.

Complete air conditioning, as known at present, involves cleansing and deodorizing air, both for breathing and for facilitating industrial operations; also adding heat and moisture during cold weather, or removing heat and moisture during warm weather, as required; and finally, distributing the completely processed atmosphere uniformly and without drafts throughout the space to be conditioned.

Many of the most modern developments will be revealed for the first time at the San Francisco Exposition. Among products to be exhibited are: Air filters, draftless diffusers, humidifiers for offices and homes, temperature and humidity controlling devices, air flow regulators, safety valves, flame detectors for furnaces, electric and pneumatic systems for regulating the operation of remotely located machinery, hot water heating appliances, window ventilators, window coolers, floor heaters, closet and basement heaters, and many others.

The Exposition will be high-lighted by many animated displays, dioramas, charts, drawings, photographs and other stimulating background material. There will be sample units in assorted sizes and types, complete model setups, working models, cut-away sections showing the arrangement and relations of internal parts and working models made of transparent material, demonstrating how the parts function under actual working conditions. Due to the fact that the Pacific region includes every variety of climate, as well as the whole range of construction problems, the display will embrace every type of equipment for heating, ventilating, air conditioning and insulation of buildings, besides instruments and automatic control devices.

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F. E. Vandaveer Addresses Western Engineering Society

Addressing the Western Society of Engineers at its April 7, 1941, meeting held in Chicago, Ill., Dr. F. E. Vandaveer, assistant director of the American Gas Association Testing Laboratories, Cleveland, Ohio, discussed new aspects of combustion of gaseous fuels as utilized in modern domestic and industrial appliances. This program was sponsored by the Gas, Fuels, and Combustion Engineering Section of this Society. George A. Morgan, market statistician, The Peoples Gas Light & Coke Co., Chicago, presided at this meeting, which was attended by over 100 engineers.

Dr. Vandaveer reviewed properties of different fuel gases which affect their burning characteristics, and principles of design of modern equipment to secure good combustion. He further summarized recent A. G. A. Testing Laboratories' research on composition of furnace atmospheres resulting from partial combustion of gaseous fuels. In addition, Dr. Vandaveer briefly compared such fuels with coal, oil, and electricity and presented statistics on their comparative usage in industrial processing and heating. He also referred to effects of the National Defense Program on utilization of gas fuel.

■ ■

McCall's Awards Prize for Best All-Gas Kitchen

The special prize for the best all-gas kitchen submitted in the kitchen planning contest conducted by *McCall's Magazine* has been awarded by the judges to Mrs. Arthur A. Frick of Pasadena, Calif.

In addition to specifying a gas range and a gas refrigerator, Mrs. Frick included in her kitchen a counter dinette or breakfast bar, as a continuation of the regular work surface over the cabinets. This counter dinette takes up almost no space and yet seats four people. Mrs. Frick's color scheme for her prize-winning kitchen was beige, peach, and rust. The kitchen is really an all-purpose room, since Mrs. Frick has made a provision not only for food preservation, preparation, and cooking, and for eating, but has also included laundry equipment at one end of the room.

McCall's Magazine will shortly publish a complete tabulation of what American women want in their kitchens, as disclosed by a detailed analysis of the 4157 entries in the contest.

■ ■

1941 Gas Refrigerator Sales More Than Double

George L. Jones, vice president and general manager of Servel, Inc., told the New England Gas Association recently that orders for gas refrigerators for the current year are running at the rate of almost two and a half times the same period of 1940.

Mr. Jones stated that 1,250,000 gas refrigerators have been sold in this country since they were first introduced 15 years ago this fall, and that these refrigerators are consuming gas at the rate of $23,000,000 worth per year. Capacity of the refrigerator has been increased nearly 40% and the efficiency, represented by the consumption of gas, has been improved nearly 30%.

WEBSTER BURNERS
and
Control Equipment

Knowledge of combustion problems as applied to heating and power boilers, plus the type of burner equipment used, either standard or special, enables Webster to solve any gas combustion problem.

The services of Webster Combustion Engineers are always available to individuals and organizations desiring consultation and assistance concerning gas burning installations.

•

All standard burners are fully described in individual bulletins, which are available on request.

•

THE WEBSTER ENGINEERING COMPANY
TULSA *Division of* OKLAHOMA
SURFACE COMBUSTION CORP., Toledo, Ohio
F. J. Evans Engineering Co., Birmingham, Atlanta and Houston
Catlett Engineers, Inc., Dallas Frank P. Fischer Engineering Co., New Orleans

Arkansas-Louisiana Would Buy Camden, Ark., System

APPLICATION for purchase of the distribution system of the Camden Gas Corp., Camden, Ark., by the Arkansas-Louisiana Gas Co. at a price of $226,000, has been filed with the Arkansas state department of public utilities.

The agreement to purchase, which is attached to the application, is signed by attorneys acting for holders of $75,000 of first mortgage bonds and $25,000 of second mortgage bonds of the Camden Gas Corp. The Arkansas-Louisiana Gas Co. agrees to inaugurate the rate schedule recently ordered for other towns in the system. The rate it was reported, will mean a reduction of approximately $5000 annually to Camden gas consumers. A Federal Power Commission trial examiner recently recommended a 20,000 annual reduction in rates at Camden.

The FPC examiner's recommendation was made after a hearing on a complaint by the Camden Gas Corp. that the city gate rate charged it by the Arkansas-Louisiana company was too high. The FPC ordered the Arkansas-Louisiana Co. to appear on June 2 and show cause why the trial examiner's report should not be adopted. Both companies have since asked dismissal of the case and have offered as basis the agreement to purchase.

■ ■

Application Filed with FPC For Illinois Line

Ray Phebus, who is engaged in oil and gas leasing development at Centralia, Ill., has applied to the Federal Power Commission for a certificate of convenience and necessity to construct and operate a natural gas pipe line from the Russellville field in Lawrence county, Ill., a distance of eight miles to the lines of the Hoosier Gas Corp. near Vincennes, Ind., for resale in Vincennes, Washington, and Princeton, Ind., and their environs. Estimated cost is approximately $50,000.

The applicant, owning or controlling production acreage in Lawrence county, states that the territory proposed to be served is already being served by another natural gas company and that a contract with Hoosier Gas Corp. for delivery of the gas makes possible a more adequate supply at rates which would effect substantial savings to consumers and to the purchaser.

■ ■

New California Wells Added by P. G. & E.

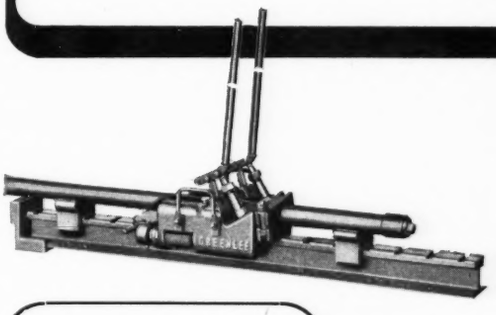
Two Yolo county, Calif., gas wells previously brought in by the Standard Oil Co. of Calif., but remaining capped will be added to the distribution system of the Pacific Gas and Electric Co., San Francisco, when work is completed on a $50,000 pipe line, 42,500-ft. long, which will carry the gas from the wells to the main pipe line at a junction south of Davis, Calif. The gas will be used largely by the Spreckels Sugar Co., one of the largest users in California.

■ ■

Louisville Gas and Electric Pipes Gas to Fort Knox

The Louisville Gas and Electric Co. has begun construction on a pipe line from Muldarugh, Ky., about 10 miles south of Louisville, to Fort Knox, Ky., an additional 10 miles further south. The line, which is to cost $30,000, is to handle increased demands of the U. S. Army encampment as a result of the National Defense program.

HOW TO CUT UNDERGROUND PIPE INSTALLATION COSTS



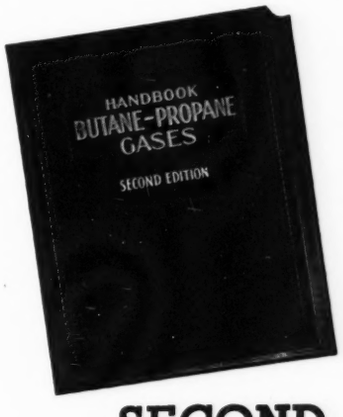
With Greenlee Hydraulic Pipe Pushers you can install pipe underground without the expense of digging long trenches, tearing up lawns, breaking through concrete, backfilling, and tamping. Only a short trench to accommodate the pusher with a section of pipe is required. One or two men can easily develop the pressure by pumping the handles.

Send for New S-117 PUSHER BULLETIN

The No. 790 Hydraulic Pipe Pusher will push pipe from 1¼ to 4-inch size, with special clamps available for ¾ and 1-inch pipe. The No. 795 Pusher, with 75 tons of hydraulic power, will handle large drainage ducts, concrete sewer pipe, and pipe beyond 4 inches. Fast . . . powerful . . . portable . . . and easy to set up . . . Greenlee pushers can save you money on every job. Send today for the free new S-117 Pusher Bulletin, describing the complete line of Greenlee Pushers.

GREENLEE TOOL CO., 1700 Columbia Ave., ROCKFORD, ILL.

HANDBOOK BUTANE-PROPANE GASES



415 Pages

CONTENTS: Semi-Bulk Distribution: Use of Butane in Buses: Combination Propane Operated Utility Plant: Use in Internal Combustion Engines: Design and Installation of Storage: Supply from Petroleum Refineries: Engineering Data on the Lower Olefins: Domestic Appliance Testing and Utilization: Economical Comparisons with Coal, Oil, Electricty. Producer Gas, Manufactured Gas: Town Plants: Manufacture from Natural Gas: Special Uses: Volume Correction Factors: Transportation: Use with Other Gases: Analysis and Testing: Properties of Mixtures: Bottled Gas Distribution: Bibliography: Central Plant Directory: Catalog Section.

SECOND EDITION

(Latest Revision Nov., 1938)

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The Natural Gas Magazine

BUTANE-PROPANE News
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Los Angeles, Calif.

Preference
earned by all-'round
LEADERSHIP

The new Model A-80, illustrated above, is PACIFIC'S answer to the problem of supplying an ultra smart and completely automatic Forced-Air basement furnace for winter air-conditioning and summer ventilating. Its clean-cut modern lines and handsome two-tone blue finish make it ideal for converting the basement into an attractive recreation room.

The Blower and Heating casings are complete separate units that are quickly and easily installed without knocking down and re-assembling. Model A-80 furnaces have PACIFIC'S exclusive round Heating Element and improved Multi-tubular type Burner with one-piece cast-iron fire box liner as standard equipment.

You're Wise if You Capitalize on PACIFIC'S Strong Customer Acceptance

Gas appliance salesmen know that PACIFIC Forced-Air Systems make friends of their customers. They recognize the sales-building value of PACIFIC'S policy to give their customers *extra value* in the things that are important to them — better appearance — greater flexibility and convenience — easier installation — more dependably filtered air ventilation, summer *and* winter — faster room heating — greater over-all economy.

They know these *extra values* are the result of PACIFIC'S 28 years of specialized experience in the design and manufacture of gas heating equipment.

Write today for free catalog and complete information about PACIFIC'S sales-stimulating line and ask about the profitable PACIFIC Dealer set-up. Address Dept. G-6.

Forced-Air Units
Forced-Air Furnaces
Gravity Basement Furnaces
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Console Heaters
Wall Heaters
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Pacific
GAS RADIATOR CO.
HUNTINGTON PARK, CALIF.

Home Service Winners Announced

SIX OF America's foremost authorities and writers on home economics met April 4, with the Home Service Committee of the American Gas Association, to judge the winners in the National Home Service Contest. The contest was open to all home service representatives of gas utilities in the United States and Canada.

The twenty-nine winners, as just announced by the American Gas Association, include a representative group of home service employees from 16 states. First prize of $100 went to Jeannette Campbell, Minneapolis Gas Light Co., Minneapolis, Minn.; Second prize of $75 went to Phyllis Ward, Southern California Gas Co., Los Angeles, Calif.; Third prize of $50 went to Margaret Phillips, Florida Power & Light Co., Miami, Fla.; and Helen Gram, The East Ohio Gas Co., received fourth prize.

The judges were: Eloise Davison, New York Herald Tribune Institute; Katherine Fisher, director, Good Housekeeping Institute and Helen Kendall of the same organization; Virginia Hart, associate editor, *House & Garden;* Ada Bessie Swann, associate editor, *Woman's Home Companion;* and Earl Lifshey, housewares and major appliance editor, *Retailing.*

Twenty-nine cash prizes, totaling $500, were awarded for the best demonstrations of CP gas ranges submitted in script form. All entries were tested and judged on the following points: A CP gas range slogan title suitable for permanent publicity purposes; originality of script and dramatic effectiveness so as to be adaptable for general use, without change, by all gas companies, dealers, department stores, women's clubs, etc.; and the organization and timing of action of the demonstration so as to simplify advance preparation.

Following the meeting the judges met at luncheon, given by the Association of Gas Appliance and Equipment Manufacturers, at the Hotel Biltmore. Besides the judges, those attending the luncheon included: Lloyd C. Ginn, sales promotion manager, American Stove Co., and chairman of the CP Sales Management Committee; Geo. L. Scofield, new business manager, Republic Light, Heat & Power Co., and chairman of the A.G.A. Domestic Range Division; the following from the A.G.A., Jessie McQueen, home service director, John W. West, Jr., secretary, and F. W. Williams, ass't secretary, Residential Section; and from the A.G.E.M., John F. Bogan, and James R. Abrams, sales promotion manager and advertising director, respectively, Domestic Gas Range Division.

■ ■

Propose Standard Sizes for Non-Ferrous Range Boilers

THE adoption of a simplified list of stock sizes of non-ferrous range boilers has been proposed, and has been submitted to the industry for consideration and acceptance, according to an announcement of the National Bureau of Standards of the U. S. Department of Commerce.

The project was proposed by the Non-Ferrous Hot Water Tank Manufacturers Association, representing manufacturers and distributors of non-ferrous range boilers. That organization estimates that not less than 200 varieties of non-ferrous range boilers have been produced in the past. The recommendation proposes the adoption of a simplified list of six stock sizes, ranging in capacity from 30 to 100 gals., each to be made in three working pressures and two styles, making a total of 36 varieties, which, it is believed, will satisfactorily meet a large majority of normal requirements.

There is also included, as information for the guidance of those who wish to prepare specifications or codes for non-ferrous tanks, the manufacturers' test procedure adopted by the Non-Ferrous Hot Water Tank Manufacturers Association. Copies of the recommendation may be secured from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

■ ■

United Gas Pipe Line Begins New Line to Camp Polk, La.

Construction was started recently on 50 miles of pipe line to bring natural gas to Camp Polk and Leesville, La., as well as to take care of increasing fuel requirements of the industries and towns between DeQuincy and Leesville, United Gas Pipe Line Co. officials announced.

From its 14-in. main line near DeQuincy, 29 miles of 8- and 10-in. line will parallel the present line to DeRidder. Fourteen miles of 8-in. line will run from DeRidder to the Camp Polk distribution system. Natural gas service will be inaugurated in the city of Leesville by means of a seven-mile extension of the 8-in. line. Scheduled for completion by the end of May, construction headquarters for the project were located in DeQuincy, DeRidder and Leesville.

■ ■

Gas Company Merger Approved by SEC

The proposed merger of the Dallas Gas Co. and the County Gas Co. of Dallas, Texas, to improve the financial condition of the former as a step toward a reduction in gas rates has been approved by the Securities and Exchange Commission in Washington, Dallas city supervisor of public utilities Frank R. Schneider reported recently.

The merger has already been approved by Dallas voters at a special election, and officials of the two companies, which together serve Dallas and vicinity, have said the move would be put into effect as soon as necessary formalities can be gone through.

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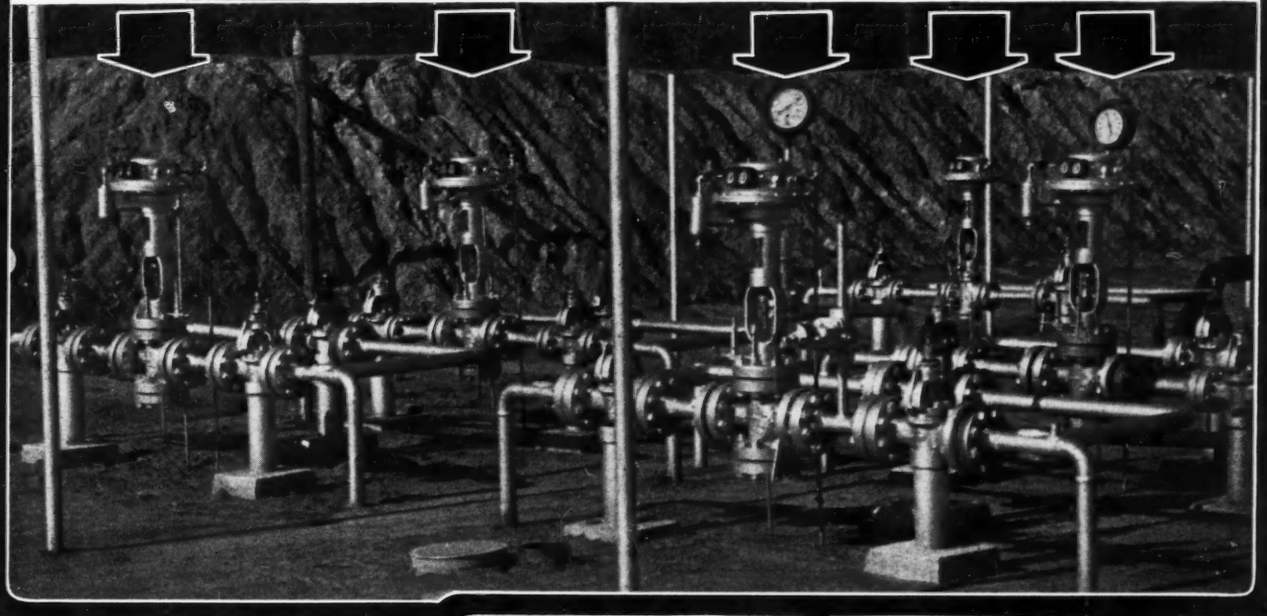
In Command

FROM WELL TO CONSUMER

Longview, Texas, distribution system of the Southern Gas Company exclusively equipped with Fisher Regulators. Another example of unqualified confidence in Fisher Controls.

FISHER WIZARD PILOT OPERATED REGULATORS CUTTING WELL PRESSURE IN 3 STAGES FROM 2900 lbs. TO 250 lbs.



The exclusive use of Fisher Regulators in this modern Gas System demonstrates

- ... The completeness of the Fisher Line, our ability to furnish every type and size of regulator required for the entire system.
- ... The confidence that Gas engineers have in Fisher Regulators — a confidence based on actual experience over a period of many years.

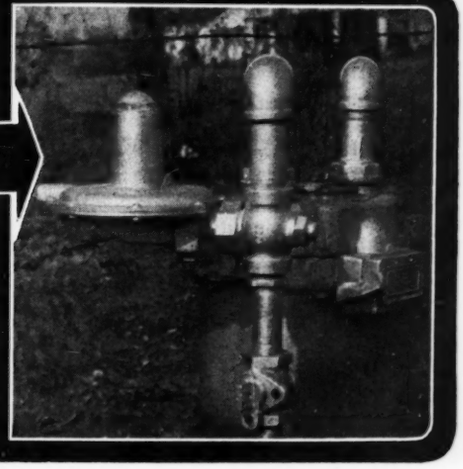
●

Call in a Fisher sales engineer whenever you have a control problem to solve. He will guarantee 100% satisfaction.

2700 ★

FISHER SAFETY SHUT-OFF SERVICE REGULATORS

Maintaining 11" WC Reduced Pressure for domestic use — providing every desirable requirement for house service regulation — accuracy, dependability, large capacity, safety and economy.



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Laclede Gas Light Co. exhibit at the St. Louis annual Home Show.

Laclede's Home Show Boosts Gas

THE service gas performs in the home of today—heating, cooking, hot water supply and refrigeration—was exemplified in the large exhibit of The Laclede Gas Light Co., St. Louis, Mo., at this year's Home Show, an annual exposition which was held in the municipal auditorium, St. Louis, the week of April 20. The display carried out the idea featured in the national campaign by the American Gas Association in leading magazines of the complete all-gas home.

Four revolving turntables illustrated the four uses of gas in the home. One showed the home heating unit, another the modern gas range, the third, the automatic storage water heater, and the fourth the Electrolux gas refrigerator. On the floor were other models of automatic gas equipment as featured on the revolving turntables.

In the center of the exhibit was a large house heating unit with its animated flame of dark blue which fades almost into a white. This gas flame has become so widely seen that large textile manufacturers are using it as a color for women's dresses and gowns this year. One thing emphasized by the display was that in gas equipment for heating, cooking, heating water and refrigeration, everything is automatic.

Featured in the cooking section of the exhibit was the All-American range—the Magic Chef—manufactured by the American Stove Co. of St. Louis. The new range, of various sizes and models, embodies all the features and specifications laid down last year by the American Gas Association.

In the house heating section, modern burners for the furnace were displayed, and the point was stressed that in home heating by gas a constant supply of fuel always is on hand, not requiring storage in the basement as other types of fuel. There are no moving parts to the burners and all are foolproof.

■ ■

Oklahoma Natural Supplies National Defense Projects

THE Oklahoma Natural Gas Co. has completed gas supply line extensions to National Defense projects near Oklahoma City, Okla.

The company laid 3½ miles of 2-in. welded line from its main line north of Yukon to the primary aviation training base, southwest of Yukon, scheduled to open late in March.

One and one-half miles of 4-in. welded line was laid by the same company to the U. S. Army Bombardment squadron base now being constructed adjoining the Oklahoma City Municipal Airport.

Branches of the federal government, which are sponsoring both projects, are constructing the gas distributing lines to connect to the Oklahoma Natural supply system.

The bombing base will cost $1,458,828 and natural gas will be utilized for cooking and heating purposes in most of the 120 buildings now completed or under construction.

■ ■

Work Begun on New Line To Guthrie, Okla.

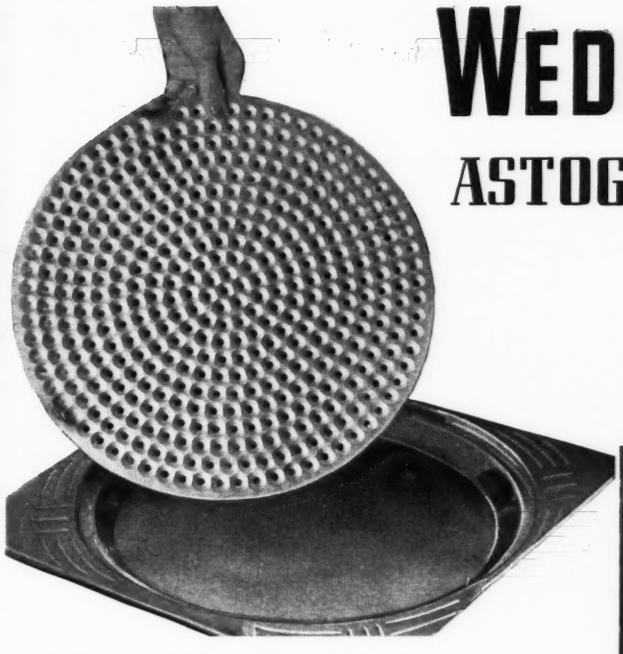
Work was underway recently on the new 16-mile gas transmission line being constructed from the Crescent-Lovell field to Guthrie, Okla., according to Merle Bahan, manager of the Guthrie Gas Utilities Co. The contract for construction of the line was let by the Guthrie firm recently to the Western States Construction Co., Oklahoma City.

The amount of the Oklahoma City company's bid on the job was not divulged, but Bahan said that the cost was expected to be approximately $85.000. The line is to be of 6-in. welded pipe.

WEDGEWOOD'S

ASTOGRIL *Rotor-disc* BROILER

another outstanding ★ WEDGEWOOD feature



Rotor-disc Broiler . . .
Chrome-plated Drip Pan

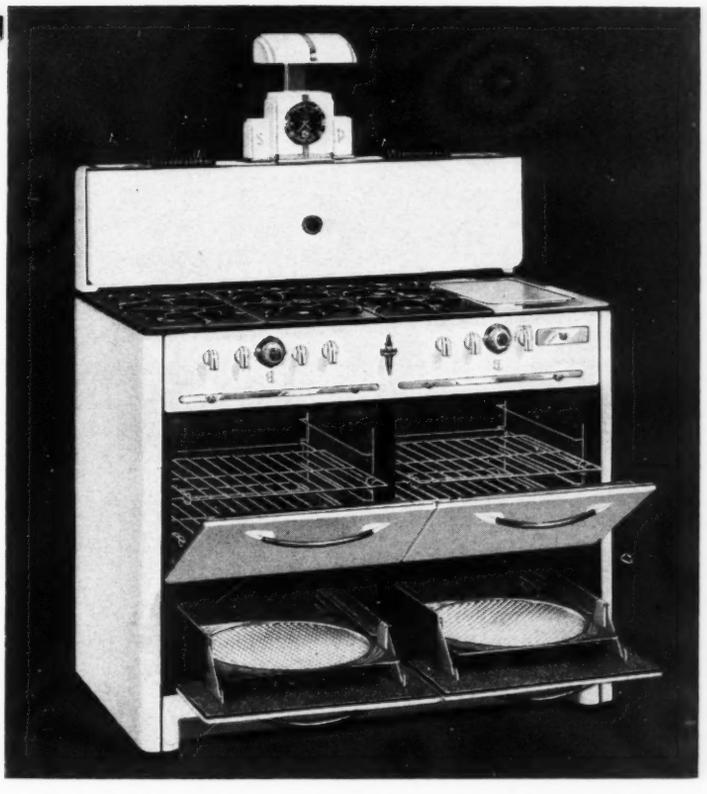
★ Smokeless and odorless.

★ Equal heat distribution.

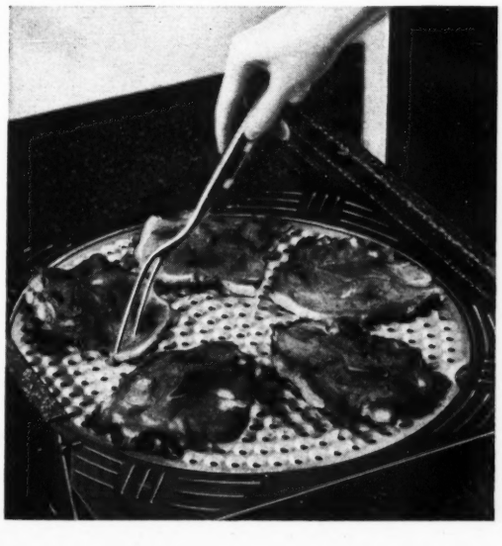
★ Broiler disc revolves.

★ Broiler burner self-lighting.

★ Easy-gliding drawer.



WEDGEWOOD CP Model 7685 features two large 18" low temperature ovens, two Astogril Smokeless Broilers plus two giant, four standard Speed-plus-simmer Burners. Built-in Top Griddle and Warmer.



WEDGEWOOD GAS RANGES
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Gas THE MODERN FUEL

WEDGEWOOD

***The* MODERN GAS RANGE**

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California Co.'s Increase Budgets

SOUTHERN California and Southern Counties Gas companies of Los Angeles announced in April through President F. S. Wade that their 1941 budget requirements for main and service extensions, new meters, pipe and gas storage installations and building construction will exceed $11,000,000, representing the largest annual budget that has been drawn up by the two companies since the early 20's, when the natural gas systems were under construction.

Last year the two companies gained over 48,000 meters. The annual rate of growth during 1940 was exceeded only twice before in the history of the gas business in southern California, and it is expected, on the basis of building activity in the first three months of this year, that the growth for 1941 will be as great, if not greater than, the preceding year.

The Southern California Gas Co. budget, which aggregates $8,950,000, contemplates an increase of at least 35,000 meters during the year, of which $2,700,000 will be required for the necessary main and service extensions and meter assemblies to take care of this new business. A total of $2,300,000 will be spent for replacing old mains and services and for laying approximately 73,000 ft. of pipe for trunk lines and reinforcing mains.

Included in the budget is a new 10,000,000 cu. ft. gas storage holder, to be erected at the Macy street plant of the company in Los Angeles. This structure will be approximately 300 ft. in diameter and 230 ft. in height, and will cost $800,000.

Plans are being made also to build a series of smaller storage holders at various points over the systems of both companies. Cost of these will aggregate nearly $1,200,000; but whether or not they will be built this year depends upon the availability of steel for other than primary defense purposes.

The building program of Southern California Gas Co. calls for the expenditure of over $700,000 for contemplated work, and an additional $665,000 to complete buildings under construction at the first of the year. In addition to seven new branch office buildings, the company plans to erect 16 cottages for employees at outpost stations, several new distribution office buildings, and to make extensive alterations and repairs in existing structures.

At present the company is constructing a $90,000 division headquarters building at Visalia, and a somewhat smaller division headquarters office building has just been completed near Taft. At Taft also 16 new cottages for employees have recently been completed — the latter in line with the company's policy of furnishing modern, comfortable living quarters for regular employees at points where adequate housing facilities are not available.

In Los Angeles, the new annex to the headquarters building on Flower street, begun last Fall, is nearing completion. This is a six-story, reinforced concrete, Class A structure, which will cost approximately $400,000. Extensive alterations are being made simultaneously to the headquarters next door.

Southern Counties Gas Co. estimates that new business will require the installation of not less than 10,000 new meters throughout the territory served by the company, and $900,000 has been budgeted to provide the necessary main extensions, services, meters and regulators. In addition this company expects to install some 152,000 ft. of piping to reinforce the distribution system and to connect the four gas storage holders, erection of which is planned. Total budget for the company amounts to $2,112,000.

■ ■

Canadian Gas Production Restricted for Duration

To help Turner Valley Oil producers maintain a production of 26,000 barrels of crude daily for the duration of the war, the Petroleum and Natural Gas Conservation Board ordered a sharp cut in gas production by Valley gas wells recently.

The May gas quota for the field was set at 68,000,000 cu. ft. daily, a reduction of 9,000,000 cu. ft. daily from the April quota. Of the May quota, only 65,000,000 cu. ft. daily will be producible because of the 25% of open flow limitation.

■ ■

Southern Counties Gas Co. Holds Sales Dance

The Southern Counties Gas Co., Los Angeles, Calif. recently featured a "Havana Hop," as the second of the dances sponsored by the Sales Department of the company. Under the leadership of Clyde H. Potter, commercial manager of the company, the dance was open to all employees and featured stunts, dancing contests and prizes.

The Lattimer-Stevens Company

No. 2305-C Meter Bar

Columbus, Ohio

The Noiseless Way . . .

to control gas heaters

Klixon electrically operated diaphragm gas valves are *silent* valves . . . non-humming, non-sticking, non-chattering. Because Klixon Valves are *Thermally* operated, *by a snap-acting Thermostatic disc*, instead of by solenoids or other fussy devices.

Klixon Gas Valves are now lower in price. "Puff bleed" is standard or "constant bleed" optional at no extra cost. Manual opening with automatic recycling available at slight extra cost. Sizes from ⅜—1¼-inch I. P. S.

Klixon Snap-Acting Room Thermostats also available. Write for complete information.

KLIXON

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806 Forest Street
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Preview of coming campaigns by

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

and the Gas Appliance Society of California

Starts this month . . .

1941 SUMMER GAS HEATING CAMPAIGN

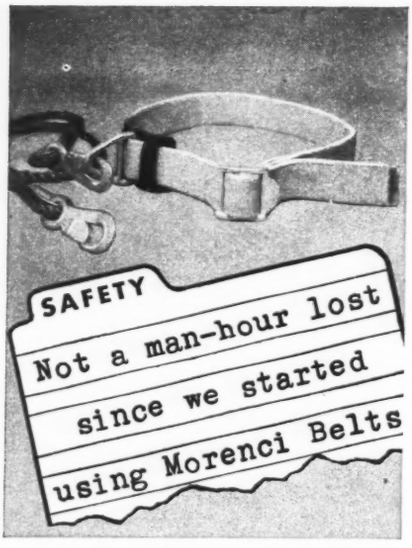
Eleven years old, the SGHC is one of the veteran promotions of its kind in the country, and probably has a record unmatched by any similar campaign anywhere.

Offers the same two inducements which have proved so successful in other years, namely, (1) a 10% reduction in the purchase price, (2) a deferment in monthly payments until the regular heating season. Also provides advertising assistance to dealers who will help themselves by paying 1/3 of their newspaper space costs.

All are eligible who retail gas heating equipment within P. G. & E. territory, and will abide by the regular campaign rules. Our local office will gladly explain.

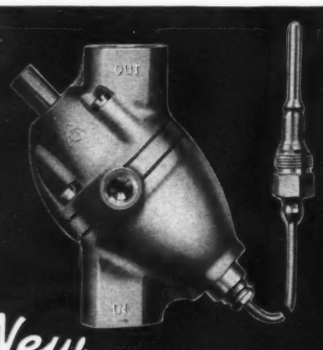
G 206-641

DEALERS: By watching this page from month to month you can keep informed of sales promotional campaigns to be sponsored by the Pacific Gas and Electric Company and the Gas Appliance Society. Detailed information will be supplied, as usual, through the mail. If such information is not received, call our local office or write Gas Appliance Society, 1355 Market Street, San Francisco, California



Users tell us that the light weight Morenci Safety Belt is so comfortable and easy to adjust that their men not only wear them but *use* them as a matter of habit. It weighs but 25 ounces, complete... yet will outwear and outhold most heavier, less flexible belts. *Continuous* tough strands run the entire length of the belt... unbroken by fastening holes or grommets. Adjustable "D" ring is readily placed in any comfortable position...but once set it *stays put.* Send for Bulletin 4064... it simplifies safety buying. E. D. Bullard Company, 275 Eighth Street, San Francisco, Calif. B-4

Everything BULLARD in Safety



New

BASO

SERIES 800 VALVE

3/8" AND 1/2"
STRAIGHT THRU
OR ANGLE TYPES

Write for Complete Information

Milwaukee Gas Specialty Company

MILWAUKEE WISCONSIN

CURRENT *Reading*

General

America's Factories, Growth and Decline—By Maxwell S. Stewart; 32 pages; paper published by Public Affairs Committee, Inc., 30 Rockefeller Plaza, New York. An interesting economic study of the comparative physical output of American factories based on "The Output of Manufacturing Industries, 1899-1937", by Solomon Fabricant, indicates how changes in four decades affect factory output.

Why Employment Relations? — By Thomas Roy Jones, Chairman, Employment Relations Committee, National Association of Manufacturers. Presents reasons for personnel relations, place of personnel men in industry, basic techniques and fundamentals of personnel relations. Indicates how recent developments have made necessary proper personnel relations, particularly during the national defense program.

Selling the Modern Gas Range—A special supplement of the National Retail Dry Goods Association Bulletin. Edited by James R. Abrams, advertising director for the Domestic Gas Range Division for the Association of Gas Appliance and Equipment Manufacturers. The supplement consists of ten illustrated chapters, analyzing various sales phases of the gas range industry. The chapters include: The potential market; why the department store is the logical outlet; examples of outstanding selling jobs; advertising and display; various types of modern gas ranges; 10 tips for merchandising. May be secured from the A.G.A.E.M., 60 E. 42nd St., New York, N. Y.

How to Teach a Job—Published by the National Foreman's Institute. Authored by R. D. Bundy, Industrial Coordinator of the Board of Education for the City of Cleveland. The author sets forth use of his actual experience with organized plan for teaching new workers specific jobs quickly. The purpose of this manual is to outline the steps for teaching and to point out certain features which are involved as well as certain precautions which bear directly upon the success of teaching a job. 60 pages; cloth; $1.00. The National Foreman's Institute, Deep River, Conn.

Gas Explosions in Buildings — Their Cause and Prevention—Information Circular 7142 of Bureau of Mines, United States Department of the Interior, December, 1940. Discusses related properties of fuel gases; describes recent gas explosions in dwellings, schools and various public buildings; lists the apparent contributory causes, and recommendation for avoidance.

Use of Gas in Homes—Woman's Home Companion Reader-Editor Report No. 40—Puplished by the Research Department of the Crowle-Collier Publishing Co., 250 Park Avenue, N. Y. This report analyzes the answers given by reader-editors of the *Woman's Home Companion* to a questionnaire sent them on the use of gas in their homes. Contents include general data on the use of gas; type of gas used; data on gas ranges, refrigeration, hot water heating, and house heating. Tables are also offered which show the use of gas by geographical sections of the country, and the use of gas by size of city.

Defense and the Consumer—By the Institute for Consumer Education; 32 pages; paper; charts; published by Public Affairs Committee, 30 Rockefeller Plaza, New York; 10c. Exposition of the plans and hopes of the National Defense Advisory Commission's Consumer Division and outline of some of the consumer problems created by war-time economy. Suggests coordination of military and civilian needs can be accomplished by letting shortages develop and rising prices curtail consumption; by establishing priorities; or by reducing purchasing power through increased taxation; but preferably should be accomplished by the more difficult method of keeping up production through the most efficient use of existing capacities, and by expansion of such capacities.

The Time and Origin and Accumulation of Petroleum—By F. M. Van Tuyl and Ben H. Parker; 180 pages; paper; charts and tables; published as Volume 36, No. 2, Colorado School of Mines "Quarterly," April, 1941; Colorado School of Mines, Golden, Colo.; $2.00. Prepared under the sponsorship of the Research Committee of the American Association of Petroleum Geologists from the answers to a questionnaire sent to petroleum geologists around the world in an effort to coordinate theories and findings and to outline important phases of the problem of determining petroleum's origin in the light of present knowledge. No definite and complete answer to the fundamental question has been obtained, but this volume presents many new findings and reveals new trails which eventually may point the way to correct conclusions. Helpful compilation of what man knows about the beginning of petroleum.

Problems in Labor Relations—Herman Feldman; 353 pages; cloth; published by The Macmillan Co., $2.00. Practical and interesting volume presenting definite case problems in labor relations. Designed to provoke thought in the mind of the student and lay reader. While prepared as a text book for the study and teaching of labor relations, the average reader will learn many of the fundamental "labor issues" and how they are complicated by human, social, and economic factors. The author makes no attempt to solve the problems cited, but states the questions to be answered and the issues to be met in finding a solution.

Patent Fundamentals—By Leon H. Amdur; 302 pages; fabrikoid; line-drawings, charts, and tables; published by The Chemical Publishing Co., Inc., 234 King St., Brooklyn, N. Y.; $4.00. A thoroughly interesting and informative treatise on the

fundamentals of patents and patent laws, written by a former patent examiner for the enlightenment of the layman. The nine chapters cover types of inventions, nature of patents, classification, preparation and prosecution of applications for patent, inventions as defined by patent claims, decisions as to what comprises an invention, the effect of use and purpose upon patent claims, etc. Starting with the invention of the cotton gin, barbed wire, expanded metal lath, rubber, and carborundum, the author explains fully and understandably the philosophy of patenting, revealing some of the mental processes involved in reaching a decision as to patentability. Good reading.

Are We Well Fed?—Miscellaneous publication No. 430, published in 1941. A report on the diets of families in the U.S. by Hazel K. Stiebeling of the Bureau of Home Economics. This booklet shows the necessity for the nation-wide nutrition drive as part of our National Defense. It has been released since the publication of the A.G.A. bulletin entitled "The Home Service Departments in the Gas Industry Cooperate in National Defense". Cost, 15c. Order from Superintendent of Documents, Washington, D. C.

Technical

The Thermal Properties of Lighter Hydrocarbons—G. G. Brown and D. E. Holcomb. *Petroleum Engineer*, April, 1941, pp. 34, etc. A practical method of determining the effect of high pressure on the enthalpy and entropy of natural gases.

Gas Engine Ignition Phenomena Paper—C. E. Miller, *California Oil World*, 2nd April, 1941, pp. 16-20.

Close Fractionation Needed to Recover Isomers from Gas—H. W. Harts. *Oil and Gas Journal*, April 24, 1941, pp. 41, etc. Importance of isobutane as a source of material for manufacture of fighting-grade aviation gasoline makes this paper on recovery of that fraction in natural gasoline plant operation particularly timely. This paper, presented April 24 at the annual meeting of the Natural Gasoline Association of America, reviews close fractionation methods essential to recovery of isobutane and other special products in natural-gasoline operations.

Marked Improvement Shown in Deep-Drilling Technique—N. Williams. *Oil and Gas Journal*, April 17, 1941, pp. 88, etc. Constant headway is being made by Gulf Coast operators in overcoming the difficulties and minimizing the hazards involved in deeper drilling. It is now probable that from a physical and mechanical standpoint most phases and known problems of deep drilling, with the possible exception of heaving shale, can be handled with more or less success by practices and equipment already developed. Remaining, however, as an important adverse factor are the excessive and almost prohibitive costs that frequently are entailed in combating the conditions and attaining the objectives.

Use of Extraneous Gas Prolongs Lifting Energy in Saxet Field—*Oil and Gas Journal*, April 17, 1941, pp. 172-174. Utilization of high pressure gas from strictly gas sands in the production by gas lift of wells in oil sands approaching depletion as a result of water intrusion and exhaustion of reservoir energy is providing the means by which Southern Minerals Corporation is making available an increased supply of casinghead gas to insure prolonged profitable operation

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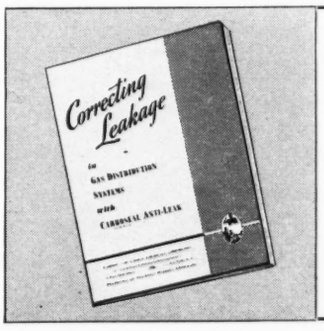

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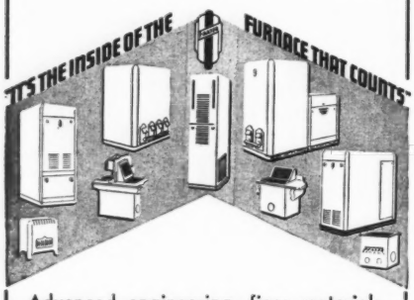

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of its natural gasoline plant in the Saxet field, Nueces County, Texas Gulf Coast. At the same time, the productive life of many oil wells facing premature abandonment because of the inability of other means of artificial lift to move the relatively large volumes of water that sometimes have to be handled is being extended, and recovery of oil from the respective sands increased.

Computation of Charts on High Pressure Gas Meters—R. O. Cox. *Petroleum Engineer*, April, 1941, pp. 82A, etc. Introduction of factor to correct for liquid seal is suggested in addition to supercompressibility factor.

Gas Fired Units Solve Many Industrial Heating Problems—W. N. Blinks. *Heating, Piping and Air Conditioning*, April, 1941, pp. 217, 218. While the author speaks primarily to men interested in sales of gas to industrial and commercial users, his picture of the place of gas fired unit heaters for solving industrial heating problems of many kinds contains a number of points of interest to plant engineers and others who are concerned with selection and purchase of the equipment. As presented here, the paper describes a number of applications where gas fired equipment may be used to advantage in the plant, with particular references to the problems arising from the national defense program, in which so many plants are now in some manner engaged.

Regulation of Pipe Lines as Common Carriers — By William Beard. 184 pages; $2.00. The first systematic and comprehensive study of the Federal and State regulations of pipe lines as common carriers. Contents: (1) The Field of Interest; (2) Origin of Common Carrier Legislation; (3) Nature in Extent of Common Carrier Status for Pipe Lines; (4) Rate Regulation; (5) Service Regulations; (6) Control Over Pipe Line Affiliations; (7) Coordination of Pipe Lines with Other forms of transportation; (8) Summary and Conclusion.

Deviations of Natural Gas from the Natural Gas Laws—George Granger Brown, University of Michigan. A paper presented at the American Recycling Association Conventino at Kingsville, Texas. Useful for theoretical calculations in forecasting of repressurin gas well bottom hole pressure, gas well ultimate deliveries and other phenonema.

Annual Report, Panhandle Oil and Gas Field— Published by the Oil and Gas Division, Railroad Commission of Texas, July, 1940. This 46-page booklet completely presents the development, status, zone establishment, and many technical details concerning this field. Includes figures of daily average gas production, average gas disposition, gas oil ratios, etc.

Amendment to Pamphlet No. 54, N.B.F.U.—At the annual meeting of the National Fire Protection Association, held in Toronto, Canada, in May, the Committee on Gases recommended some additions to the "Recommended good practice requirements for the installation, maintenance and use of piping and fittings for city gas", published in 1932 as Pamphlet No. 54 of the National Board of Fire Underwriters. This new section was tentatively adopted in 1939. It deals with gas-fired floor furnaces and is numbered section 38-A.

Intermittent Repressuring of Pennsylvania Oil Sands—P. A. Dickey. *Oil and Gas Journal*, April 10, 1941, pp. 35-38. Efficient application of air or gas as a driving medium in repressuring operations involves many difficult technical problems. In this article the value of intermittent injection and its effect on ultimate oil recovery are discussed, and actual results obtained on a small-scale project are given.

Simple Blueprint Reading With Special Reference to Welding — Published by The Lincoln Electric Co., Cleveland, Ohio; obtainable from any dealer or representative of the Lincoln Electric Co., or through any recognized book dealer; price 50c in U.S.A., or 75c elsewhere, postage prepaid. Takes the reader through the elements of picture drawing of welded assemblies, conventional symbols and their use, structural drawings, and tank and pipe drawings; briefly outlines how a blueprint is made; concludes with a series of questions and answers.

Laboratory Tests of Cathodic Protection in Soils—W. R. Hill. *Petroleum Engineer*, March, 1941., pp. 69, etc. Data indicate a fairly reliable inverse relationship between soil resistivity and current density—a high pressure soil requires a low current density for protection and vice versa.

Features of First Cycling Plant in Lower Rio Grande Valley—H. C. Givens. *Petroleum Engineer*, March, 1941, pp. 151, etc. Installation is designed primarily as a pilot plant to test economics of operation in San Salvador field, Texas.

Field Tests of Gas Show Prospects for Cycling—E. O. Buck. *Oil Weekly*, March 3, 1941, pp. 15-17. This discussion describes the procedure and results of field testing of gas to determine the feasibility, both from an operating and economical standpoint, of erecting a cycling plant.

Practical Economics of Cycling—B. B. Boatright and P. C. Dixon. *Oil and Gas Journal*, March 6, 1941, pp. 41, etc. The purpose of this paper is to present in practical form a discussion of factors which, in the ultimate analysis, determine the probable degree of success and profit to be derived from a cycling enterprise. In order to coordinate the presentation of many divergent subjects, it is written as though directed to persons who seek a pattern about which they may intelligently attack the problem of inspecting and possibly developing a cycling project. An A.P.I. paper.

Gas Cycling—A series of articles on this subject was published in the February, 1941, issue of *Petroleum Engineer*. The titles and authors of these articles are as follows:

1. Conservation and Economics of Gas-Condensate Fields — J. O. Lewis, pp. 51, 53, 54.

2. Construction and Operation Problems in Gulf Coast Cycling Plants—R. C. Fish, pp. 55-57, 60.

3. Problems in Condensate-Type Production — R. L. Huntington and Charles Schmidt, pp. 65, etc.

4. Testing Condensate-Type Wells — G. O. Kimmel, pp. 76, etc.

5. Engineering Aspect sof Cycling and Condensate Recovery—H. N. Wade, pp. 84, etc.

6. Well Completion Methods in Condensate Fields—

7. Physical Properties of Hydrocarbon Mixtures in Condensate Production —F. H. Dotterweich, pp. 98-99.

8. Basic Considerations Confronting the Cycling Plant Operator—Emby Kaye, pp. 101, 102, 104.

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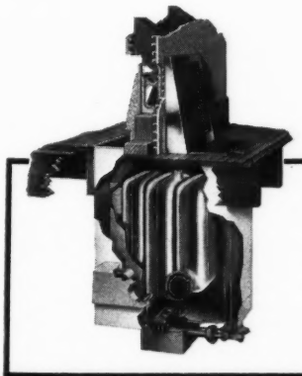

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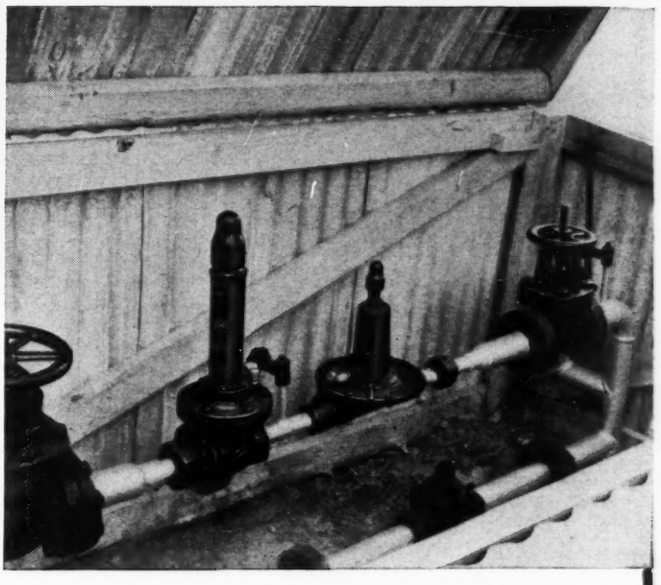

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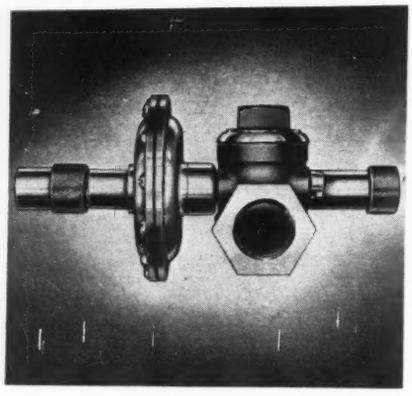


Gas Valves

Security Valve Corp., Los Angeles, Calif.
Model: Defense Valves.

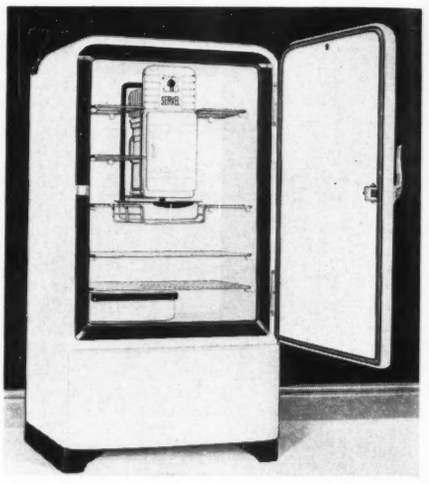
Description: Instant, positive action to close gas supply lines and prevent explosions in case of high or low pressure or fire, is afforded by these new valves. To the former hazards of explosion from uncontrolled gas has been added the ever-present danger of sabotage of supply lines, against which protection must now be given for public buildings, industrial plants, commercial establishments and homes. The new Defense Valves can be set for any pressure range from 1 ounce to 50 pounds. When pressure drops to a predetermined low, the diaphragm plunger moves in one direction to close the valve; when pressure mounts to a predetermined high, the plunger moves in the opposite direction to shut off the supply; in case of fire, increased temperature fuses the supporting link and the valve is instantly closed. Returning pressure cannot cause the valve to leak and re-open.

The valve can be reset without being taken down. All that is necessary is to remove a screw cap and set the plunger in central position, a few seconds operation for either the owner or gas company employee. The valve cannot be reset in open position unless the gas pressure is between high and low limits. The valves are made of government formula bronze, 88-10-2, or electric steel. Sizes: ¾ in. to 20 in.

Refrigerator

Servel, Inc., Evansville, Ind.
Model: Electrolux.

Description: The new low-price six-cubic foot Servel Electrolux refrigerator which has just been released to gas companies throughout the country has been designed with an eye to serving the moderate income family with its need for the popular sized model. The symmetry of its exterior, finished in glistening white Newtone enamel, will enhance the appearance of any modern kitchen. The door is opened by a double action handle. Twelve square feet of shelf area is provided for food storage. Ample room for keeping various sized bottles or containers is provided in the shelves adjoining the freezing unit. Two ice cube trays and a frozen dessert or ice cream tray, which can also be used for making ice cubes, assure a constant supply of ice. Under the freezing unit is a porcelain tray for the storage of meats. A second large porcelain container is also provided for vegetables. A handy thermostat and manual defroster is situated right over the freezing unit.



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Model: Handy Carrier

Description: The Handy Carrier consists of two half circles hinged together by flat-headed bolts. Each half circle is provided with a handle which works through a housing at the center of each half circle. A key made integral with the handle may be engaged in either of two keyways provided in the housing, depending on the size cylinder to be carried. By engaging the key with the short key way, the carrier will fit the smaller or oxygen cylinder. Engagement of the key with the long keyway adjusts the carrier to fit the larger acetylene cylinders. With the cylinder standing on end, the carrier is slipped over it and lowered to a point just above center. Lifting on the handles causes the carrier to catch a friction hold on the cylinder. Thus, with arms lowered to a comfortable distance from the shoulders, two men can carry a 240-lb. acetylene cylinder safely and without undue strain.

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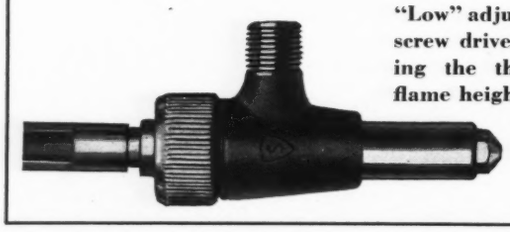

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Catalogs

• Payne Furnace and Supply Co., Beverly Hills, Calif., has recently issued new bulletin material concerning product revisions and new equipment for incorporation in their catalog. Bulletin HU describes the Payne Spacesaver Unit, a completely new product in design and application. Full details are given concerning the applications of this Unit for residential, commercial, and industrial heating. Bulletin A-3 shows only minor changes in the Table of Dimensions and Capacities on page 4. Bulletin CB-4 gives complete information on the new Payne "CB" (Commercial Blower) Furnace. The Challenger line heretofore included only the Floor and Duplex Furnace, but there has been added the Extended Register Furnace, to add to the flexibility of this line. This is now described on page 3 of Bulletin CHF.

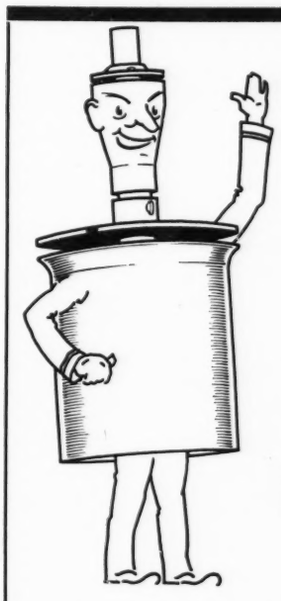
• The Brown Instrument Co., Philadelphia, Pa. has just issued a new Catalog No. 77-1 —"Brown and Minneapolis-Honeywell Industrial Power Units and Motorized Valves." This catalog describes a line of motor power units and motorized valves designed to operate with Brown Control Instruments and form an important part of the control system. By using a control instrument and control motor designed specifically for each other, the best results are obtainable.

Profusely illustrated, actual photographs are shown of electric control motors, slip stem globe type, rotary stem globe type, butterfly type, pilot operated, three-way and special valves. Dimension tables and schematic diagrams give an accurate idea of workmanship and operation.

• The National Machine Works, Chicago, Ill., announced recently the issuance of their new manual. National Machine's specialized designs are now incorporated in a line of standard equipment, suitable for universal application. This equipment is described and engineering data supplied in convenient individual bulletin form, bound loose-leaf fashion in a durable binder. The items now available are National torch tips, Hyperbo burners, proportional mixers, Lo-Blast power gas burners, high-pressure inspirators, blast line burners and air heaters. Additional equipment will be added shortly. This manual is particularly interesting in the method it presents for selection of proper equipment. Large, easily read charts provide for quick solution of gas-heating problems.

• A new condensed catalog for 1941 has just been issued by Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. Shown within the covers are time tested controls for practically every possible installation. Full details and specifications are given for every item, including details for proper ordering, prices, etc. Much supplementary information is included, enabling the selection of the right control for every condition.

• "Heresite", a catalog of finishes and plastics, was recently issued by the Heresite and Chemical Co., Manitowoc, Wis. "Heresite" is the registered trade name of a series of highly resistant industrial finishes which are modifications of the same basic synthetic resin, a heat-reactive phenol-formaldehyde reaction product. Products made from or treated with this material are fully described and illustrated in this bulletin.



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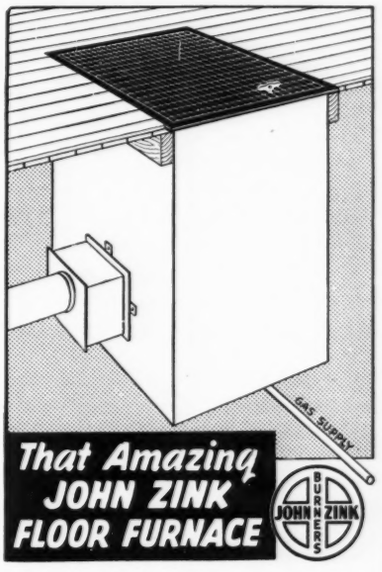

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Water Heater Standards Revised

AT the 47th meeting of the American Gas Association Approval Requirements Committee held on March 21, 1941, recommended revisions to American Standard Approval Requirements for Gas Water Heaters and Listing Requirements for Attachable Water Heating Units were reviewed and approved with minor revisions. A tentative set of standards covering gas counter appliances was also considered and approved. All become effective January 1, 1942. Mimeographed copies have been prepared and distributed to interested manufacturers. They are also being submitted to the American Standards Association for acceptance as American Standard.

Strengthening of performance tests for automatic pilots forms one of the principal revisions to current requirements for gas water heaters and attachable water heating units. Tests have been added to assure satisfactory continued performance of such devices for the life of the complete unit. Provision has also been made for assuring rated hydrostatic test pressures for storage vessels of assembled water heaters. These must withstand a hydrostatic test pressure of 300 lbs. per sq. in., or their rated pressure if greater than this amount, without developing leakage or permanent deformation.

New standards covering gas counter appliances were developed. They apply to gas coffee brewers and urns, gas fired hot water immersion sterilizers, and commercial hot plates and griddles. They cover not only city gases, but liquefied petroleum gases and butane-air gas as well. In addition to providing for all necessary constructional features, performance tests designed to simulate actual conditions under which they operate in practice have been included.

Although these three sets of requirements do not become effective until January 1, 1942, any manufacturers electing to do so may submit equipment for test for compliance with them in advance of that date. Further information may be obtained by addressing the A. G. A. Testing Laboratories in Cleveland, or Los Angeles.

■ ■

Mountain Fuel Supply Plans Gas Line in Wyoming

Mountain Fuel Supply Co. is planning to lay 32 miles of 8⅝-in. O.D. pipe for a natural gas line which will loop part of the company's system. The line will start at a point 65 miles southeast of the Rock Springs, Wyo., field. Specifications will be issued and bids will be received early in September and it is expected that work will start that month.

FPC Dismisses Application For North Dakota Line

THE Federal Power Commission has dismissed without prejudice the application filed on December 30, 1938, by the North Dakota Consumers Gas Co. for a certificate of public convenience and necessity authorizing the construction and operation of natural gas pipe line facilities from Mandan, N. D., to serve communities in North Dakota and Minnesota.

The order dismissing the application is based on failure of the company substantially to comply with directions contained in the Commission's Opinion No. 39, relating to proposed pipe line constructions in the Middle West. On April 10, 1941, the company, responding to a show-cause order of the Commission, asked that its application not be dismissed, stating that certain expenditures had been made and that certain natural gas reserves had been made available to it.

The Commission, in its Opinion No. 39, stated intention to authorize the issuance of the certificate applied for upon satisfactory further showing regarding financial and other matters.

■ ■

Natural Gas Approval Given For Monroe, Mich.

The Michigan state public service commission recently approved the petition of the National Utilities Co. of Michigan to pipe natural gas to Monroe, Mich., and distribute it to its customers in the city and surrounding territory. The rate schedule submitted by the gas company was approved by the commission.

Officials of the company, in Monroe to make arrangements for the changeover from manufactured gas, which has been supplied to Monroe since 1859, to natural gas, estimated that by mid-July the change would be completed. Cost of the changeover was expected to be approximately $70,000. The first step in the process will be the laying of a pipe line of 6⅝-in. pipe from the line now serving Detroit.

■ ■

Rincon Repressuring Plant To Start Operations

The $300,000 pressure-maintenance plant built by Continental Oil Co. in the Rincon field, Starr county, Texas, was to have begun operations recently. The plant is designed to return to the producing formations all gas recoverable in normal oil-producing operations. Gas will be repressured from the field's 57 producers and returned to the pay zones at 3750 and 4000 ft. through only one well for the present. The plant contains two 660-hp. combination engines and compressors, and they will handle all current gas production estimated at 1,500,000 to 1,750,000 cu. ft. daily.

■ ■

Webster, Texas, to Have Natural Gas Service

The town of Webster, Texas, located on the Houston-Galveston highway, has been piped for natural gas service and gas was turned into the city mains early in April. The setting of meters has been rapid, and soon all the homes and businesses in Webster will be using natural gas. Webster will be served by the Gulf Cities Division of Houston Natural Gas System, and will be under the supervision of J. S. Sullivan, Texas City, Texas, district manager.

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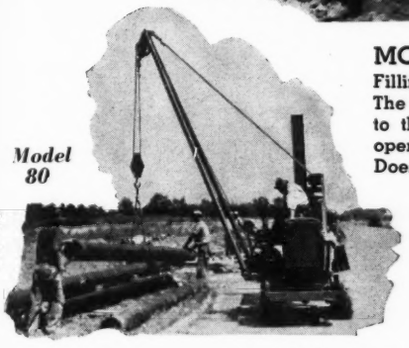

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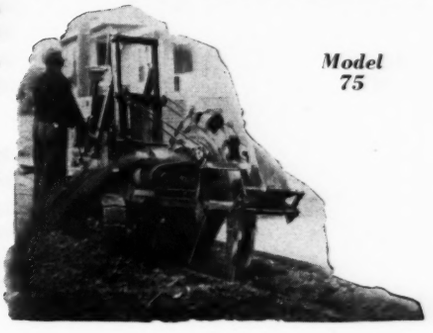

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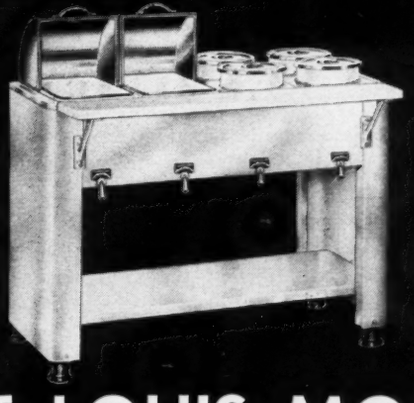

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Servel Announces Winner of High School Food Project

GRAND national winner in Servel's Second High School Food Project to promote practical knowledge among the youth of the nation of the role which modern gas home refrigeration plays in food purchasing, preservation and preparation, is 17-year-old Mae Lee Dow, of Central High School, Grand Rapids, Mich. High school home economics students in 20 states are receiving national, regional, and state awards in the project, conducted by the Home Economics Department of Servel, Inc., Evansville, Ind.

For her report, Miss Dow will receive from Servel a summer vacation, all-expense trip to the West Coast with her home economics teacher, Miss Carmen Mains, and Miss Lucille Hall, Home Service Director of the Michigan Consolidated Gas Co., Grand Rapids, Mich.

Miss Hall's award from Servel is a special feature in recognition of her enthusiastic promotion of the High School Food Project plan in Grand Rapids, where 1100 students entered a city-wide project for awards.

Four national winners are each receiving a $100 cash college scholarship award. Their school laboratories are being presented with a Servel Electrolux refrigerator.

■ ■

Spacing Regulations Set For Oklahoma Field

THE most recent application of well spacing regulations to an all-gas field in Oklahoma was made by the state corporation commission recently covering 640 acres in Creek county, being operated by Burke-Greis Oil Corp., and H. N. Greis, trustee for the Deep Rock Oil Corp.

The commission, March 1, authorized the establishment of 40-acre drilling units in this field for development of the Prue sand, common source of natural gas supply. Each operator may drill one well on each 40-acre tract, approximately in the center of the unit, provided that in case of diversified ownership where offsets are permitted wells may be drilled other than in the center. No well is permitted to produce more than 25% of its total potential.

Two wells already are producing on the 640-acre tract, one capable of producing about 1,000,000 cu. ft. per day, and the other with a potential capacity of approximately 9,000,000 cu. ft. daily. The wells are producing at depths of from 2850 to 2924 ft.

The commission holds that authorization of drilling on less than a 40-acre spacing basis would constitute economic waste in the field.

■ ■

Wisconsin Commission Assumes Gas Control

The Wisconsin Public Service Commission announced recently that it had assumed jurisdiction over natural gas companies and would hold hearings to consider applications for authority to serve Wisconsin cities.

The commission held a joint hearing with the Federal Power Commission to determine which agency should have jurisdiction. The commission then deferred its decision until a determination was made as to whether a certificate for proposed projects was required by the federal natural gas act. "After full hearings, the Federal Power Commission has determined it has no jurisdiction to issue certificates," the state body said.

■ ■

Memphis Natural Plans $800,000 Program

According to a recent announcement by Birger Johnson, president of the Memphis Natural Gas Co., Memphis, Tenn., that company is planning an $800,000 pipe line construction project this year, part of which includes the building of parallel lines from Monroe, La., to Memphis, Tenn. The plans include installation of a 600-hp. compressor at Guthrie, La.; work to begin in June or July. In addition, 50 miles of 18-in. line will be built between Guthrie and Memphis, via Wilmot, Ark., Benoit and Lula, Miss. The program is expected to increase the system's capacity 10,000,000 cu. ft.

■ ■

FPC Dismisses Rate Case

The Federal Power Commission has dismissed the proceeding concerning rates for natural gas sold by Cities Service Gas Co., Kansas City, Mo., to the Western Light & Telephone Co. of Kansas City, Kan.

FPC Dismisses Application For Minnesota Pipe Line

THE application of Kansas Pipe Line & Gas Co., Blackwell, Okla., to construct a 2300-mile natural gas pipe line from the Hugoton gas field in Kansas to the Mesabi Iron Range in Minnesota has been dismissed without prejudice by the Federal Power Commission because the company has failed to prosecute its proposal for the project.

The company, according to the Commission's order, failed to respond to the Commision's show-cause order entered March 13, 1941, regarding the proposed pipe line and has failed to further prosecute its application in accordance with the Commission's Opinion relating to the application. The company was directed to show cause on or before April 12 why the application for a certificate of public convenience and necessity should not be dismissed.

The Kansas Pipe Line & Gas Co.'s application for a pipe line to serve distributors and consumers in the States of Kansas, Nebraska, South Dakota, North Dakota and Minnesota was filed with the Commission on September 10, 1938. Cost of the proposed extension was estimated by the applicant as $14,550,000.

■ ■

Texoma Natural to Expand Pipe Line System

Construction work began April 15 on 33 miles of 26-in. pipe line from the Texoma Natural Gas Co.'s compressor station near Gray, Okla., which is now under construction, to connect with the company's existing pipe line system at several points. The new compressor station will be powered by four 1000-hp. Cooper units. On the plant location will also be constructed complete plants for the extraction of gasoline and moisture.

The 26-in. line will extend for a distance of 17 miles and then will parallel the company's 24-in. line for a distance of 16 miles and will connect with it at several points. The new station and pipe line will have a capacity of 37 500,000 cu. ft. of gas per day.

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1940 A.G.A. Proceedings Are Now Available

The 1940 American Gas Association Proceedings, which cover a year's work of industry activities and contain a detailed record of the Association's Annual Convention held in Atlantic City last October, are now available, according to a recent release from that group. Many important subjects also are treated, as every year the Association gathers together one of the finest and most representative group of papers presented by the gas industry. All the sections—General, Accounting, Commercial, Industrial Gas, Natural Gas, and Technical—are thoroughly covered. Price is $3.00 to members and $7.00 to non-members.

■ ■

Field Office in Iowa for O. E. Dempsey Co.

Preparatory to the laying of 101 miles of 26-in. pipe for the Natural Gas Pipeline Co. of America, the O. E. Dempsey Construction Co. is establishing a field office at Crescent, Iowa. Shipments of pipe are due to arrive there soon and work will be under way at an early date. Construction will be directed by Joe Works, superintendent.

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